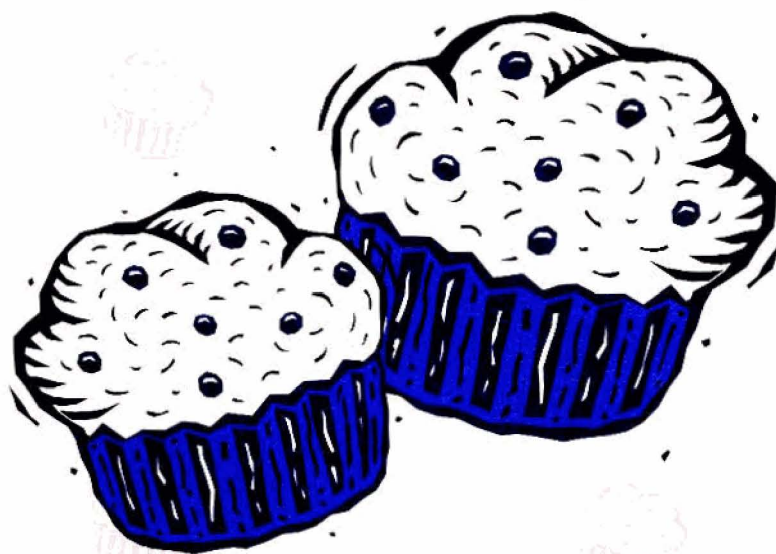




Muffins & More



Patricia F. Thonney



Cornell Cooperative Extension

Acknowledgments

Muffins & More is one in a series of publications to help children ages 9 to 12 acquire food skills and appreciate the science of cooking. The goals of the Cooking Up Fun! initiative are to

- increase life skills related to food preparation.
- model practices that reflect the Dietary Guidelines and the Food Guide Pyramid.
- promote locally produced foods.
- expand opportunities for experiential learning.
- develop understanding of the science of cooking.
- have fun!

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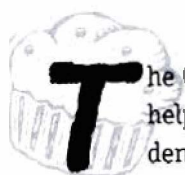
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About This Teaching Guide



The Cooking Up Fun! series is designed to help youth ages 9 to 12 develop independent cooking skills. Recipes are the primary teaching tool, and creating conversations from the recipes is important.

Muffins & More allows flexibility in planning and delivering programs in a variety of settings. It is especially appropriate for informal education settings—4-H clubs, EFNEP, summer camps, scouts, and other community programs—that provide the time and freedom for personal exploration and repetition of activities.

Information to help adults plan and deliver a cooking program featuring muffins and other quick breads is organized into five sections:

- **About This Teaching Guide** states the philosophy and goals for teaching independent cooking skills, including their role in nutrition education.
- **Creating a Cooking Program** provides guidance for planning, teaching, and evaluating a series of cooking sessions. It includes one possible teaching plan for six sequential sessions.
- **Recipes** includes 14 basic recipes, plus variations, for muffins and other quick breads.
- **Food Activities** promote skills related to reading recipes, kitchen safety, and ingredient science.
- **More Information** provides a quick reference for selected nutrition, food, and cooking topics.

Experiential Learning

Cooking, reading recipes, reading food labels, and doing experiments are all ways of discovering the science of food and food ingredients, including nutritional benefits. The more opportunities youth have to discover the information you think they should know, the more effective your teaching will be. And the more fun they will have!

Experiential learning puts the adult in the role of facilitator rather than lecturer or “expert” teacher. Several strategies will help you develop teaching plans that ensure experiential learning.

- **Planning.** Involve the youth in planning the cooking program by selecting recipes together. Find out what they are interested in learning. Everyone enjoys having choices!

Listening. Take the time to let youth share what they know about a recipe before you start cooking. This recognizes personal experiences they bring to the session, provides an opportunity for youth to interact with each other, and will help you guide the learning process.

Creating conversations. Ask questions to help youth discover information rather than just giving them lots of facts. Open-ended questions promote more conversation than closed-ended questions such as those with yes or no answers. Conversations promote thinking skills that result in more meaningful learning.

- **Being flexible.** Allow the youth to change your teaching plan. It’s a good idea to have an organized outline of what you plan to do. But it’s also a good idea to change it while you’re teaching to meet unexpected needs or interests of the youth.
- **Having fun!** As important as anything you say is your enthusiasm for learning. Relax and have fun!

Science in the Kitchen

Cooking is science. From physical changes to chemical reactions, much happens when you prepare muffins and other quick breads.

You use the science of chemistry to mix ingredients and to bake batters and doughs. You explore biology when handling grains and other plant foods. And you learn the science of nutrition when talking about how your body uses food.

Youth gain much from the process of cooking and doing science. They learn to choose appropriate tools and handle them safely, follow a procedure, ask questions, and wonder what would happen “if I used whole wheat flour instead of all-purpose flour; if I used less sugar; if I left out the salt.” They gain confidence from success and from sharing the results with others.

Life Skills from the Kitchen

Many life skills are closely interwoven with science and food skills. Three categories of food skills are emphasized in *Muffins & More*—reading recipes; food and kitchen safety; and ingredient science, which includes nutritional benefits.

Each of the food skills promotes one or more life skills, including the ability to acquire knowledge, make decisions, communicate, and recognize self-worth. Part of self-worth is the individuality that comes from creative and cultural expression in cooking. It also includes the “I can do it!” feelings of accomplishment that are so important to healthy growth and development. Life skills acquired from successful cooking experiences will transfer to other activities, helping youth become productive members of society.

Nutrition and Cooking

Baking is fun! Yet sometimes the results add more calories than nutrients. High-fat or high-calorie breads are best eaten once in a while instead of every day. That message is taught more effectively to youth by

making the bread than by warning them to avoid it. Teaching that it is OK to prepare all foods avoids labeling them as good or bad. Baking from scratch increases understanding about ingredients, including fat and sugar content. Cooking provides many opportunities for learning nutrition and enjoying food.

Breads are grain foods, the base of the Food Guide Pyramid. In general, quick breads have more fat, sugar, and sodium than yeast breads. Yet recipes vary widely. Some muffins have the same ingredient proportions as cupcakes; others have very little fat. Some tortillas contain no fat; others contain some fat.

Recipes in *Muffins & More* provide standards of comparison for different types of quick breads. Ingredients were selected to limit fat and sugar while producing acceptable products. Many conversations about nutrition can emerge from comparing ingredient labels and talking about the choices. Some foods contain nutrients that are lost during baking, like vitamin C in orange juice. Others add more flavor than nutrition when used in small amounts. But that’s OK. Using fruits and vegetables may not make the breads more nutritious but will increase familiarity with a variety of foods.

Learning independent cooking skills is a foundation for healthy choices and good nutrition. As youth gain experience handling foods, they can prepare more snacks and meals for their family, friends, and personal enjoyment. The more familiar they become with a variety of foods and their preparation, the more likely they are to adopt healthy eating practices now and in the future.

Creating a Cooking Program

Recipe Collection

Recipes in *Muffins & More* were selected to model healthy food choices. They reflect concepts from the Dietary Guidelines and the Food Guide Pyramid: to enjoy a variety of foods, choosing plenty of grains, vegetables, and fruits; and to limit fat, sugar, and sodium. This recipe collection should be expanded to include personal and cultural preferences.

Nutrition is only one of many criteria to consider when selecting recipes for beginning cooks. The recipes provided in *Muffins & More*

- use low-cost ingredients.
- use readily available ingredients.
- require only basic tools and equipment.
- have easy-to-follow instructions.
- provide opportunities to practice cooking techniques.
- require limited adult assistance.
- are easy to prepare and clean up.
- teach concepts of the Dietary Guidelines.
- promote locally produced foods.
- increase exposure to a variety of foods.
- reflect a variety of cultural contexts.
- are fun to make!
- taste great!

Try collecting all the recipes for muffins from cookbooks and magazines, and you'll soon have hundreds. Yet all are variations on a basic recipe. The same is true for other quick breads. With a few basic skills, you can change ingredients to create dozens of variations—new flavors, new textures, less fat, more fiber, or other qualities you want. Use the variations in *Muffins & More* recipes to promote an understanding of the functions of ingredients while encouraging individual creativity. Your baking will be both successful and fun!

Basic Recipe	Variations
Blueberry Muffins	Whole Wheat Raspberry Raisin Oatmeal Apple Lemon Blueberry
Bran Muffins	Whole Wheat Raisin Carrot Orange Date
Corn Bread	Buttermilk Whole Wheat Corny Cheesy Chili Cheese Blueberry Corn Bread Muffins
Biscuits	Drop Whole Wheat Buttermilk Herb Cheesy Shortcake Rolled Cinnamon
Scones	Whole Wheat Apple Cinnamon Pumpkin Spice Cheesy
Soda Bread	Whole Wheat Raisin Caraway
Brown Bread	
Banana Bread	Whole Wheat Banana Blueberry Banana Carrot Banana Cranberry Peanut Butter Banana Zucchini
Gingerbread	Whole Wheat Honey Apple
Popovers	Cheddar Herb
Pancakes	Buttermilk Whole Wheat Buckwheat Apple Blueberry Broccoli
Chapatis	
Tortillas	
Whole Grain Crackers	

Cooking Stations

One of the many decisions in creating a cooking program is deciding how everyone is going to work in the available space with the available supplies. Begin by knowing the environment and the needs of the youth. Individual work areas are ideal for experiential learning but may not be possible with space, cost, adult supervision, or other constraints.

Three ways to organize cooking stations are described. Which works best for your teaching situation? What other possibilities could be considered?

Cooking Independently

Individual work stations ensure that each child gets to manipulate ingredients and equipment and practice all steps of the cooking process. Many children will benefit from the opportunity to work independently. This works best if you have

- a small group (one to four).
- adequate space to spread out.
- multiple sets of cooking tools.
- enough ingredients.
- children capable of working independently.
- the ability to supervise multiple stations.

If you choose an option other than individual cooking stations, encourage children to try the cooking activity again at home with adult supervision or provide another time in your program for them to practice the skills.

Cooking with a Partner

This strategy is similar to individual work stations and can be a good way for children to master skills. Many children enjoy working with a partner and are able to share tasks. This system works best if you have

- a small to medium group (four to eight).
- an even number of children.
- children who enjoy working together.
- adequate space to spread out.
- multiple sets of cooking tools.
- enough ingredients.
- the ability to supervise several stations and ensure that one "buddy" isn't dominating.

Cooking in a Group

This approach promotes cooperative learning skills, but it is the least desirable for teaching cooking skills. It is more like a "demonstration" in which tasks are divided among several children. Each child usually spends more time watching and waiting for a turn than actually doing. You might choose this approach if you have

- a medium to large group (six to twelve).
- limited space.
- limited time.
- limited equipment and ingredients.
- inability to supervise multiple work stations.
- exhausted the possibilities for breaking into smaller groups.

Supplies

A major part of planning a cooking program is organizing supplies. If you need to transport equipment to various locations, create a supply kit to keep basic equipment together in a large storage bin. The number of youth and type of cooking stations will determine how much duplicate equipment is needed.

Many baking ingredients can also be organized into a supply kit. Be sure all containers have tight-fitting lids or place in resealable storage bags.

Checklist of Baking Ingredients

Flour/Grain

all-purpose flour
whole wheat flour
rye flour
oats
cornmeal
whole wheat bran cereal

Sweetener

white granulated sugar
brown sugar
molasses
honey

Fat

vegetable oil
shortening
margarine
butter
peanut butter
eggs

Liquid

skim milk
buttermilk
yogurt
apple juice
water

Leavening

baking powder
baking soda
cream of tartar

Seasoning/Spice

salt
nutmeg
cinnamon
ginger
lemon peel
orange peel
vanilla extract
lemon juice
chili powder
cayenne
dill weed

Other Ingredients

blueberries
banana
apple
applesauce
pumpkin
carrot
raisins
dates
cheese
green chilies

Checklist of Baking Equipment

Measuring

liquid measuring cup
dry measuring cups
measuring spoons
spatula or table knife

Mixing

mixing bowls
wooden spoons
pastry blender or forks
rubber scraper

Cutting

cutting board
paring knife
grater
peeler
chef's knife
2-inch round cutter

Baking

baking sheet
muffin tin
loaf pan (8 x 4, 9 x 5)
square pan (9 x 9, 8 x 8)
cooling rack
potholders

Cooking

small saucepan
cast iron skillet or
griddle

Cleaning

dishcloth
dish towel
dish detergent

Cooking Conversations

Recipes are the primary teaching tool in a cooking program, and creating conversation from them is important. Food skills, including relevant nutrition information, should emerge from a cycle of activity: selecting ingredients, sharing experiences, making the recipe, evaluating results, and planning the next session.

Selecting Ingredients

Cooking involves many decisions. Most ingredients are available in more than one form, type, or brand, and choosing different recipes provides opportunities for individual preference.

The choice of ingredients will set certain conditions or parameters for the recipe and conversations about it. Consider planning one session as a field trip to a local food store to involve youth in this step of food preparation. Another way to involve youth in the process of selecting ingredients is to collect a variety of food packages for reading labels and making comparisons. Youth could help to create the collection.

Providing ingredients for one or more variations in a recipe allows individual choice and creativity. It also allows you to compare ingredients and show how recipes can be changed. Here are some examples from the Scones recipe:

- Whole wheat flour adds fiber and changes flavor and texture.
- Pumpkin adds vitamin A and changes flavor.
- Cinnamon enhances sweetness.

Cheese adds calcium and changes flavor.

Sharing Experiences

Take time to find out what the youth already know about a recipe. This will help you recognize the personal experiences they bring to the session, allow them to interact with each other, and guide the learning process. Opening each cooking session with a brief conversation can also tell you if they are using information learned from previous sessions.

It's a good idea to have a few questions to start the conversation, but be prepared to let the youth direct it as well. You can capture their questions or comments for future reflection in a group notebook or on a large sheet of newsprint taped to the wall.

Here are examples for Blueberry Muffins:

- Have you ever made muffins? (from scratch or a mix; on your own)

What ingredients do you think are in muffins?

- How do you think muffins and cupcakes are alike or different?
- How have you eaten muffins? (snack, walking to the bus, dinner)

Questions that compare two recipes can be asked again at the end of cooking sessions. These questions will promote comparison thinking and discussion about ingredients, cooking techniques, and product characteristics.

You could also begin a session with discussion about the recipe used in the previous session and ask whether youth tried making it at home. Did they have any problems? How did family or friends like it? What changes or variations were tried?

Making the Recipe

Demonstrating techniques before you start may be useful but is not essential. If you think it is, have one of the youth help you rather than just lecturing to them.

Be prepared to guide the cooking process but don't be too directive. When youth are learning to cook it's OK to make mistakes or not follow the directions precisely. At the end of the session, you may decide that repeating it together would strengthen their cooking skills.

As they work or while the food is baking, involve the youth in conversation about what different instructions mean, what steps can be done in different ways, and why a certain technique will affect the product's acceptability. Encourage youth to ask questions about both ingredients and manipulation of the ingredients.

Evaluating the Results

Conclude the cooking experience by evaluating the bread. An evaluation can be simply jotted down on scrap paper and might look like this:

Appearance	<i>Excellent</i>	<i>Good</i>	<i>Need to Improve</i>
Flavor	<i>Excellent</i>	<i>Good</i>	<i>Need to Improve</i>
Texture	<i>Excellent</i>	<i>Good</i>	<i>Need to Improve</i>

Or it could be a more detailed score sheet like those used for judging 4-H fair exhibits (page 18). Talk about personal preferences and how you might change the recipe to make it more acceptable.

Evaluating the cooking experience includes more than just deciding the quality of the bread. Talk about the process as well. Were any mixing or baking techniques confusing? What might you do differently? How easy was it to work together? Did everyone help clean up? What suggestions do you have for the next session?

Encourage youth to make the recipe at home and to practice until they can prepare it on their own. It often takes several repetitions for youth to be able to use recipes independently.

Planning the Next Session

At the end of each session, review plans for the next session. If youth are helping provide supplies for the cooking program, it's a good idea to send home a written reminder for the next session.

The "What's Your Choice?—Recipe Selection" sheet (page 14) is a way to involve youth in selecting recipes for a cooking program. You may choose to do this planning all in the first session. Or you may want to select recipes as you go along. Sometimes conversations or new experiences will shift interests in a new direction and changing a plan could be a good idea.

Teaching Tips

Cooking is a wonderful vehicle for self-expression and social interaction. To make it a rewarding experience,

- monitor frustration levels and assist if needed but allow youth the time and space they need to learn new skills.
- recognize participation and progress toward mastering skills.
- offer lots of encouragement.
listen.
- relax and show enthusiasm for learning.

Food Activities

Food activities are grouped into three skill-building categories: reading recipes, practicing food and kitchen safety, and understanding ingredients. In addition, an annotated listing of children's storybooks about bread is provided. Add your own ideas to each category or involve the youth to create new ones.

Reading Recipes

These activities are designed to help youth learn skills related to interpreting recipes and following directions. Knowing how to handle tools and manipulate ingredients is part of using written recipes. It takes practice to use recipes easily and will also strengthen basic language skills.

Keep It Safe

These activities are designed to help youth learn skills related to kitchen and food safety. Sharp knives, electrical appliances, and hot foods make kitchens the source of many home accidents. Knowing how to handle equipment safely prevents accidents.

Keeping food safe to eat is part of kitchen safety. Too often germs that cause infections and disease are carried in improperly handled food. Practicing safe food handling skills prevents illness.

Ingredient Science

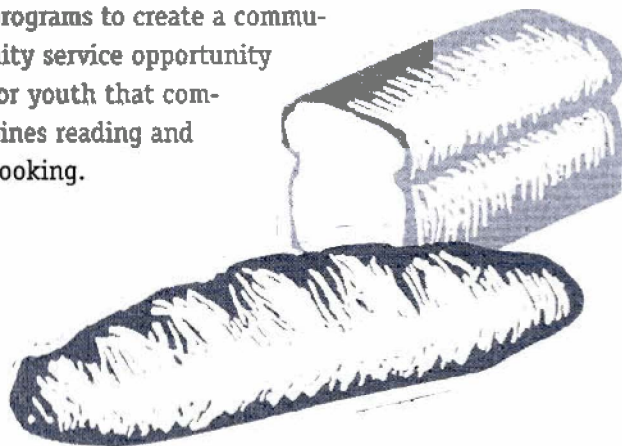
These activities are designed to help youth learn skills related to the function of ingredients, including nutritional benefits. Activities are organized by concepts that include learning about fat, calories, fiber, iron, leavening agents, and physical and chemical properties of baking ingredients. Each concept includes two experiments and additional activities that involve reading labels and recipes.

The "Fast Facts about Food Ingredients" provides a broader context for simple experiments. You don't need to know a lot of facts to have an effective science experience with youth. Genuine curiosity and a willingness to explore new things are the real keys to success.

Storybooks about Bread

Storybooks are a great way to create conversations about food. Many convey cultural experiences that may not be easily found in all communities. Although written for younger children, these storybooks provide interesting information about food for all ages.

Reading to younger children is also a great way for youth to begin sharing what they know about food. Connect with local libraries or literacy programs to create a community service opportunity for youth that combines reading and cooking.



More Information

What is the most important nutrition information for you to know? You certainly don't need to be a nutritional "expert" to create an educational cooking program for youth. You do need a willingness to learn and the ability to find reliable information.

The information sheets provide some quick basics to give the adult facilitator a broader context for doing the various activities in *Muffins & More*.

Introducing the Food Guide Pyramid—a general guide for choosing healthy diets

Nutrients and What They Do—a simplified chart that connects nutrients to the Food Guide Pyramid

A Cook's Guide to Cleanliness—tips for handling food safely

What's in a Recipe?—a description of basic ingredients and their functions in breads

Baking Notes—tips about ingredients, mixing batters, and modifying recipes

A Cook's Language and Tools—a brief cooking dictionary

Fast Facts about Ingredients—concepts related to science experiments

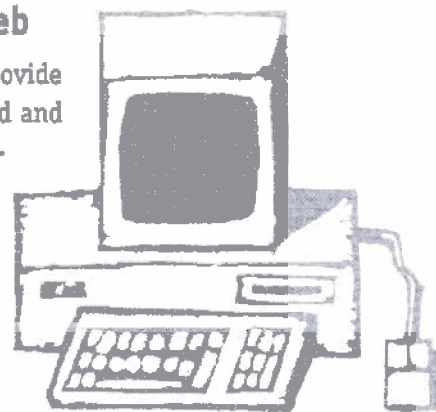
It's on the Web

Many Web sites provide easy access to food and nutrition information. When

youth have a question, it's a good bet that they will enjoy looking it up on

the computer. This

strategy also helps build technology skills. Here are a few reliable, youth-friendly sites:



<http://www.dole5aday.com>

Dole 5-A-Day is sponsored by Dole Food Company for youth ages 5 to 12. A cast of cartoon characters create an engaging way to learn all about fruits and vegetables.

<http://www.kidsfood.org>

Kids Food Cyber Club is sponsored by the Connecticut Association for Human Services and Kaiser Permanente for youth ages 8 to 12. A variety of games and interactive features teach about food, nutrition, and health.

<http://www.health.org/gpower/bodywise>

BodyWise is sponsored by the Department of Health and Human Services for girls ages 9 to 14 as part of the national Girl Power! campaign. A variety of games and interactive features provide information on exercise, healthy eating habits, and positive role models.

Sample Cooking Program

6-Session Teaching Plan

This teaching plan using material in *Muffins & More* is designed for six 2-hour sessions with a small group of youth. Each session features one recipe, plus additional food activities to do before, during, or after the cooking experience. In the first session the youth should help select the recipes for subsequent sessions. The additional food activities cover basic concepts and are not linked to any one recipe. The goal is to use each recipe as a basis for teaching food skills related to using recipes, practicing food and kitchen safety, and understanding ingredients, including nutritional benefits. This can be achieved through conversations while you're cooking, as well as doing additional food activities.

Session 1: Making Muffins

Food Skills

- Cooking Experience
Keep It Safe—Clean Hands Role Play
- Ingredient Science—Finding Fat

Life Skills

- Acquiring knowledge
- Making decisions
- Communicating
- Recognizing self-worth

Involve youth in choosing recipes for remaining sessions.

Session 2: Making _____

Food Skills

- Cooking Experience
Reading Recipes—Measure Up!
- Ingredient Science—Inflating Reactions

Life Skills

- Acquiring knowledge
- Making decisions
Communicating
- Recognizing self-worth

Session 3: Making _____

Food Skills

- Cooking Experience
Keep It Safe—In the Kitchen
- Ingredient Science—Calorie Connections

Life Skills

- Acquiring knowledge
- Making decisions
- Communicating
- Recognizing self-worth

Session 4: Making _____

Food Skills

- Cooking Experience
- Reading Recipes—Prepare Ahead
- Ingredient Science—Mystery Whites

Life Skills

- Acquiring knowledge
- Making decisions
- Communicating
- Recognizing self-worth

Session 5: Making _____

Food Skills

- Cooking Experience
Keep It Safe—Where It Goes Relay
- Ingredient Science—Sifting through Fiber

Life Skills

- Acquiring knowledge
- Making decisions
- Communicating
Recognizing self-worth

Session 6: Making _____

Food Skills

- Cooking Experience
- Reading Recipes—Whatzit?
- Ingredient Science—Iron Attraction

Life Skills

- Acquiring knowledge
- Making decisions
- Communicating
Recognizing self-worth

What's Your Choice?

Recipe Selection

Your Name _____

In the first session we will prepare muffins. Help select recipes for the rest of the cooking sessions. Read over the following descriptions of recipes, decide what you are most interested in making, and list your choices here.

1. Muffins _____	3. _____	5. _____
2. _____	4. _____	6. _____

Corn Bread

Discover the distinctive flavor and texture of cornmeal in bread. Make it extra “corny” by adding corn—one of several variations you can try.

Biscuits

Make picture perfect rounds or the most wonderful “ugly” biscuits you can imagine. It’s a recipe that can be used for shortcake or pizza crust.

Scones

What’s a scone? It’s a Scottish tradition that’s like a sweet biscuit. But you can make it sweet, spicy, or cheesy.

Soda Bread

The name of this Irish classic comes from baking soda used for leavening. Create your own hand-shaped loaf, with or without raisins or caraway seeds.

Brown Bread

Enjoy a taste of the past without the fuss. This recipe creates a good imitation of Boston Brown Bread without steaming or long hours of preparation.

Banana Bread

From apple to zucchini, choose your flavor. It’s easy to change a recipe for banana bread to zucchini bread.

Gingerbread

It’s not exactly a bread but it’s not a cake either. This recipe blends ginger and molasses into a somewhat mild but distinctive flavor. Create more flavor sensations by adding fruit.

Popovers

Powered by egg and steam, this bread really “pops.” The floppy shapes add to the fun! No wonder it was named “popover.”

Pancakes

Flip up some fun making pancakes! Yes, pancakes are a type of bread that easily makes a meal—breakfast, lunch, dinner, or snack! Add variety by creating toppings other than just butter and syrup.

Chapatis

From India comes this unleavened bread made from just whole wheat flour, salt, and water. Sort of like a pancake, it’s cooked on a griddle or skillet.

Tortillas

Yet another unleavened bread hails from Mexico. And yes, it too cooks on a griddle or skillet.

Crackers

Just for fun, compare crackers to breads. They are sort of like a tortilla or chapatis but not really. Guess what creates the crispness!

Sample Planning Sheet 1

Create Your Own Cooking Program

Session	Focus Activities (10–15 minutes)	Cooking Experience (45–60 minutes)	Ingredient Science (20–30 minutes)	Teaching Concepts
1. Making Muffins Include 15 minutes for choosing recipes for other sessions.	Talk about Muffins <i>Keep It Safe!—Clean Hands Role Play</i>	Set up work stations. Prepare <i>Blueberry Muffins</i> . Evaluate product quality. Clean up work stations.	<i>Finding Fat</i> Test for fat; identify ingredients in recipes and on food labels that add fat; identify ways to limit fat.	1. Keeping hands clean keeps food safe to eat. 2. You can make ingredient choices to limit fat in muffins and other baked products.
2. _____	Talk about _____ <i>Reading Recipes—Measure Up!</i>	Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.	<i>Inflating Reactions</i> Experiment with leavening agents.	1. Standard measuring tools make successful baking easier. 2. Leavening agents create chemical reactions.
3. _____	Talk about _____ <i>Keep It Safe!—In the Kitchen</i>	Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.	<i>Calorie Connections</i> Create a human calorie model and compare food labels for calories per serving.	1. Handling tools and equipment safely prevents kitchen accidents. 2. Calories in baked products come from three nutrients.
4. _____	Talk about _____ <i>Reading Recipes—Prepare Ahead</i>	Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.	<i>Mystery Whites</i> Compare the physical and chemical properties of several dry ingredients used in baking.	1. An ingredient list sometimes includes preparation steps. 2. Each ingredient has specific functions in a recipe.
5. _____	Talk about _____ <i>Keep It Safe!—Where It Goes Relay</i>	Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.	<i>Sifting through Fiber</i> Compare the physical properties of several flours and grains; identify ingredients in recipes and on food labels that add fiber.	1. Proper storage keeps food safe and reduces food waste. 2. Whole grains, fruits, and vegetables contain fiber.
6. _____	Talk about _____ <i>Reading Recipes—Whatzit?</i>	Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.	<i>Iron Attraction</i> Experiment to find iron in cereal; identify ingredients in recipes and on food labels that add iron.	1. Kitchen tools have been created for specific tasks. 2. Iron is a nutrient (mineral) in whole grain and enriched flours.

Sample Planning Sheet 2

Create Your Own Cooking Program

Session	Focus Activities (10–15 minutes)	Cooking Experience (45–60 minutes)	Ingredient Science (20–30 minutes)	Teaching Concepts
1. Making Muffins Include 15 minutes for choosing recipes for other sessions.	Talk about Muffins <i>Keep It Safe!—Clean Hands Role Play</i>	Set up work stations. Prepare <i>Blueberry Muffins</i> . Evaluate product quality. Clean up work stations.	<i>Finding Fat</i> Test for fat; identify ingredients in recipes and on food labels that add fat; identify ways to limit fat.	1. Keeping hands clean keeps food safe to eat. 2. You can make ingredient choices to limit fat in muffins and other baked products.
2. _____		Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.		
3. _____		Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.		
4. _____		Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.		
5. _____		Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.		
6. _____		Set up work stations. Prepare _____ Evaluate product quality. Clean up work stations.		

Record Sheet

Check Your Progress

[illegible]

My thoughts:

Three things I learned about making muffins and quick breads:

1. _____
2. _____
3. _____

Two things I learned about kitchen and food safety:

1. _____
2. _____

Two things I learned about ingredients:

1. _____
2. _____

Three things I shared with family, friends, or younger children:

1. _____
2. _____
3. _____

What I enjoyed most:_____

Your name _____ **Date** _____

Score Sheet
Muffins & Other Quick Breads
(Muffins, Biscuits, Scones, Loaf Bread)

	Ratings*			Comments
	1	2	3	
Outside Characteristics				
color (typical of kind)				
crust (typical of kind)				
uniform shape (typical of kind)				
uniform size				
Inside Characteristics				
moist (not soggy, dry, or doughy)				
tender (not tough)				
fine, even cells or holes				
color (typical of kind)				
Flavor				
well blended (typical of kind)				
no off-flavors				
Recipe Card				
clear, legible, complete				

* 1 = well done; 2 = good; 3 = could improve

General Comments:

Evaluation Form

Name: _____ Date: _____

Phone, e-mail, address: _____

Please take a few minutes to tell us how well *Muffins & More* met your needs and how it could be improved for working with youth ages 9 to 12. Return this form to your local Cornell Cooperative Extension office or to *Cooking Up Fun!*, 308 MVR Hall—DNS, Cornell University, Ithaca, NY 14853.

About Yourself

<input type="checkbox"/> 4-H leader <input type="checkbox"/> Community youth educator <input type="checkbox"/> EFNEP educator	<input type="checkbox"/> School-age child care provider <input type="checkbox"/> Classroom teacher <input type="checkbox"/> Home schooling parent	<input type="checkbox"/> Parent/guardian <input type="checkbox"/> Other _____
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Youth Participation: Briefly describe the program(s) in which you used this resource.

Description of setting	Description of children	Number of participants
<input type="checkbox"/> School-age child care <input type="checkbox"/> 4-H club <input type="checkbox"/> EFNEP <input type="checkbox"/> Community youth program <input type="checkbox"/> Parenting program <input type="checkbox"/> Camp <input type="checkbox"/> Classroom <input type="checkbox"/> Other _____	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> African American <input type="checkbox"/> Caucasian <input type="checkbox"/> Hispanic <input type="checkbox"/> Native American <input type="checkbox"/> Other _____	9-year-olds _____ 10-year-olds _____ 11-year-olds _____ 12-year-olds _____ Other _____

Your Use of *Muffins & More*: Check all that apply.

How I used the teaching guide	About the sequential sessions in our program
<input type="checkbox"/> I created a new program for youth. <input type="checkbox"/> I used parts in existing programs for youth. <input type="checkbox"/> I involved youth in planning the program. <input type="checkbox"/> I used the Sample Cooking Program. <input type="checkbox"/> I would use this teaching guide again. <input type="checkbox"/> I shared this teaching guide with another educator.	Number of times we met: _____ How frequently we met: <input type="checkbox"/> daily <input type="checkbox"/> weekly <input type="checkbox"/> monthly Length of each session: _____ hour(s). Where we met: _____ Other comments: _____

How would you rate *Muffins & More*? EXCELLENT GOOD FAIR POOR

Did you receive any training for using *Muffins & More*? NO YES—where? _____

What did you especially like about *Muffins & More*?

How could we improve *Muffins & More*?



Recipes





Blueberry Muffins

Makes 12 muffins

Ingredients

all-purpose flour	2 cups
sugar	1/4 cup
baking powder	1 tablespoon
egg	1
vegetable oil	1/4 cup
skim milk	1 cup
blueberries	1 cup

Create-a-Flavor Changes

Add your own ideas, too!

Whole Wheat Muffins. Substitute 2 cups whole wheat flour for all-purpose flour. Use whole wheat flour with any of the following variations.

Raspberry Muffins. Substitute 1 cup raspberries (or blackberries) for the blueberries. To avoid crushing the berries, fold them into the batter very gently.

Raisin Oatmeal Muffins. Omit blueberries. Use 1 cup all-purpose flour and 1 cup quick-cooking oats. Add 1/2 teaspoon nutmeg, 1/4 teaspoon cinnamon, and 1 cup raisins to the flour mixture.

Apple Muffins. Omit blueberries. Add 1/2 teaspoon cinnamon to the flour mixture. Add 1/2 cup finely chopped apple with the milk.

Lemon Blueberry Muffins. Use 1/2 cup blueberries. Substitute 1 cup lemon lowfat yogurt for milk. Add 1 teaspoon grated lemon peel with the flour.

To Prepare

1. Preheat oven to 400. Grease bottoms only of 12 medium muffin cups.
2. Measure flour, sugar, and baking powder into a large mixing bowl. Stir to combine ingredients.
3. Crack egg into a small bowl and beat with a fork to combine white and yolk.
4. Make a well in the center of flour mixture; add egg, oil, and milk. Stir batter just until dry ingredients are moistened; batter will be lumpy. Fold in blueberries.
5. Divide batter among muffin cups, filling each about half full.
6. Bake 20 minutes, until firm to touch.

Equipment

measuring cups, measuring spoons, liquid measuring cup, wooden spoon, fork, large mixing bowl, small bowl, wooden spoon, 12-cup muffin pan, oven



Bran Muffins

Makes 12 muffins

Ingredients

wheat bran cereal	2 cups
skim milk	1 1/4 cups
brown sugar	1/3 cup
all-purpose flour	1 cup
baking powder	1 1/2 teaspoons
baking soda	1/2 teaspoon
cinnamon	1/2 teaspoon
egg	1
applesauce	1/2 cup

Create-a-Flavor Changes

Add your own ideas, too!

Whole Wheat Bran Muffins. Substitute 1 cup whole wheat flour for all-purpose flour. *Use whole wheat flour for any of the following variations.*

Raisin Bran Muffins. Add 1/2 cup raisins with bran cereal.

Carrot Bran Muffins. Add 1/2 cup shredded carrots and 1/2 cup raisins with bran cereal.

Orange Date Bran Muffins. Add 1/2 cup cut-up dates and 1 tablespoon grated orange peel with bran cereal.

To Prepare

1. Heat oven to 400. Grease bottoms only of 12 medium muffin cups.
2. Measure bran cereal, milk, and brown sugar into a large mixing bowl. Stir to combine ingredients and let stand 5 minutes.
3. In a second large bowl, measure flour, baking powder, baking soda, and cinnamon. Stir to combine ingredients. Set aside.
4. Add egg and applesauce to the bran mixture. Stir to combine ingredients.
5. Add bran mixture to flour mixture. Stir just until dry ingredients are moistened; batter will be lumpy.
6. Divide batter among muffin cups, filling each about 2/3 full.
7. Bake 20 minutes, until firm to touch.

Equipment

measuring cups, measuring spoons, liquid measuring cups, wooden spoon, 2 large mixing bowls, 12-cup muffin pan, oven

Corn Bread

Makes 12 2-inch squares

Ingredients

cornmeal	1 cup
all-purpose flour	1 cup
sugar	2 tablespoons
baking powder	1 tablespoon
egg	1
vegetable oil	1/4 cup
skim milk	1 cup

Create-a-Flavor Changes

Add your own ideas, too!

Buttermilk Corn Bread. Use only 2 teaspoons baking powder and add 1/4 teaspoon baking soda. Substitute 1 cup buttermilk for skim milk.

Whole Wheat Corn Bread. Use 1/2 cup all-purpose flour and 1/2 cup whole wheat flour.

Corny Corn Bread. Add 1 cup corn kernels (fresh, frozen, or canned, well drained) with the milk.

Cheesy Corn Bread. Add 1/2 cup shredded cheddar cheese with the milk.

Chili Cheese Corn Bread. Add 1/2 teaspoon chili powder to flour mixture. Drain one 4-ounce can chopped green chilies. Add chilies and 1/4 cup shredded Monterey jack cheese with the milk.

Blueberry Corn Bread. Fold 1 cup blueberries (fresh, frozen, or canned, well drained) into the batter.

Corn Bread Muffins. Pour batter into prepared muffin cups. Bake 20 minutes at 400.

To Prepare

1. Heat oven to 425. Grease 8- or 9-inch square pan.
2. Measure cornmeal, flour, sugar, and baking powder into a large mixing bowl. Stir to combine ingredients.
3. Crack egg into a small bowl and beat with a fork to combine white and yolk.
4. Add egg, oil, and milk to flour mixture. Mix until ingredients are well blended.
5. Pour batter into prepared pan.
6. Bake 20 to 25 minutes, until firm to touch or wooden pick inserted in the center comes out clean.

Equipment

measuring spoons, measuring cups, large mixing bowl, small bowl, fork, wooden spoon, 8- or 9-inch square baking pan, oven

Biscuits

Makes 12 to 15 biscuits

Ingredients

all-purpose flour	2 cups
baking powder	1 tablespoon
salt	1/4 teaspoon
shortening	1/4 cup
skim milk	3/4 cup

Create-a-Flavor Changes

Add your own ideas, too!

Drop Biscuits. Use 1 cup milk. Drop dough by spoonfuls onto greased baking sheet. *Use this method for any of the following ingredient variations.*

Whole Wheat Biscuits. Use 1 cup all-purpose flour and 1 cup whole wheat flour. *Use whole wheat flour for any of the following variations.*

Buttermilk Biscuits. Decrease baking powder to 2 teaspoons and add 1/4 teaspoon baking soda. Substitute 1 cup buttermilk for the milk.

Herb Biscuits. Add 3/4 teaspoon crushed dried dill weed or other herbs with the flour.

Cheesy Biscuits. Add 1/2 cup finely grated cheddar cheese with the milk.

Shortcake. Use 1 cup milk. Add 2 tablespoons sugar with the flour. Pat into greased 8-inch round pan. Bake 15–20 minutes. Cut into wedges, split open, and cover with strawberries or other berries.

Rolled Cinnamon Biscuits. Roll dough into a rectangle (about 9 x 13-inches). Mix 1/4 cup sugar and 1 teaspoon cinnamon; sprinkle on dough. Roll up dough from longer side, making a 13-inch-long roll; pinch edges tightly to seal. Cut into 1-inch slices. Place slices on baking sheet or in muffin pans.

To Prepare

1. Preheat oven to 450.
2. Measure flour, baking powder, and salt into a large mixing bowl. Stir to combine ingredients.
3. With a pastry cutter or two knives, cut shortening into flour mixture until it resembles fine crumbs. Stir in milk.
4. Turn dough onto a lightly floured surface. Knead gently about 10 times to make a soft, cohesive dough.
5. Pat or roll dough into a circle about 1/2 inch thick. Cut with a 2-inch round cutter dipped in flour.
6. Place biscuits about 1 inch apart on an ungreased baking sheet.
7. Bake 10 to 12 minutes, until golden brown.

Equipment

measuring cups, measuring spoons, large mixing bowl, wooden spoon, pastry cutter, 2-inch round cutter, baking sheet

Scones

Makes 10 scones

Ingredients

all-purpose flour	1 1/2 cups
sugar	2 tablespoons
cream of tartar	2 teaspoons
baking soda	1 teaspoon
margarine	2 tablespoons
white raisins	1/2 cup
skim milk	1/2 cup

Create-a-Flavor Changes

Add your own ideas, too!

Leavening option. Omit cream of tartar and baking soda. Use 1 tablespoon baking powder.

Whole Wheat Scones. Use 1 cup all-purpose flour and 1/2 cup whole wheat flour. Use dark raisins instead of white. *Use whole wheat flour for any of the following variations.*

Apple Cinnamon Scones. Add 1/4 teaspoon cinnamon to flour mixture. Add 1/2 cup finely chopped apples with the milk.

Pumpkin Spice Scones. Add 1/4 teaspoon nutmeg and 1/4 teaspoon ginger to flour mixture. Use dark raisins instead of white. Use 1/4 cup milk. Add 1/4 cup canned pumpkin with the milk.

Cheesy Scones. Add a pinch of cayenne pepper to the flour. Omit raisins. Add 1/4 cup grated cheddar cheese with the milk.

To Prepare

1. Preheat oven to 425.
2. Measure flour, sugar, cream of tartar, and baking soda into a large mixing bowl. Stir to combine ingredients.
3. Using a pastry cutter or two forks, cut margarine into flour mixture until it resembles fine crumbs. Add raisins.
4. Add milk to flour mixture and mix to form a soft, slightly sticky dough.
5. Turn dough onto a floured surface. Push dough together by turning it over and pushing it together a few times, working in enough flour to keep it from sticking to the surface (*don't actually knead the dough*). Pat or roll dough into a circle 1/2 inch thick.
6. Dip a 2 1/2-inch round cutter in flour and then cut dough. (*If the dough sticks to the surface, push it all together again and work a little more flour across the work surface.*)
7. Place scones about 1 inch apart on ungreased baking sheet.
8. Bake 8 to 10 minutes until golden brown.

Equipment

measuring cups, wooden spoon, measuring spoons, pastry cutter, large mixing bowl, baking sheet, 2 1/2-inch round cutters

Soda Bread

Makes 4 mini-loaves of bread

Ingredients

all-purpose flour	2 cups
whole wheat flour	1 cup
salt	1/2 teaspoon
baking powder	1 1/2 teaspoons
baking soda	1/2 teaspoon
sugar	2 tablespoons
margarine	2 tablespoons
egg	1
skim milk	1 cup
lemon juice	1 teaspoon

Create-a-Flavor Changes

Add your own ideas, too!

Whole Wheat. Use 1 cup all-purpose flour and 1 cup whole wheat flour.

Raisins. Add 1 cup raisins or other cut-up dried fruit before kneading dough.

Caraway. Add 2 teaspoons caraway seeds to flour mixture.

To Prepare

1. Preheat oven to 375.
2. Measure flours, salt, baking powder, baking soda, and sugar into a large bowl. Stir to combine ingredients. Set aside.
3. Melt margarine in a small saucepan over low heat (or microwave on high 30 seconds); cool.
4. Crack egg into a small bowl and beat. Add milk, lemon juice, and melted margarine. Stir to combine ingredients.
5. Pour egg mixture into flour mixture. Stir until dry ingredients are moistened.
6. Turn dough onto a lightly floured surface. Knead until smooth, about 3 minutes. It's OK for the dough to be a little sticky, but add more flour if the dough gets too sticky to handle.
7. Shape the dough into four rounded loaves, about 4 inches in diameter; place on baking sheet.
8. With a sharp knife dipped in flour, cut a cross 1/2 inch deep across the top of each loaf.
9. Bake 20 to 25 minutes, until brown and crusty.

Equipment

measuring cups, measuring spoons, large mixing bowl, small saucepan, small bowl, wooden spoon, sharp knife, baking sheet

Brown Bread

Makes one 8 x 4 loaf of bread (24 slices)

Ingredients

rye flour	1/2 cup
whole wheat flour	1/2 cup
cornmeal	1/2 cup
baking soda	1 teaspoon
raisins	1/2 cup
buttermilk	1 cup
molasses	1/4 cup

To Prepare

1. Preheat oven to 350. Grease and flour an 8 x 4-inch loaf pan.
2. Measure flours, cornmeal, baking soda, and raisins into a large mixing bowl.
3. Add buttermilk and molasses, stirring until well blended.
4. Pour batter into prepared pan.
5. Bake about 30 minutes, or until wooden pick inserted in the center comes out clean. Cool in pan 5 minutes. Remove from pan to cool on wire rack.

Equipment

measuring cups, measuring spoons, large mixing bowl, wooden spoon, 8 x 4-inch loaf pan, oven, cooling rack

Banana Bread

Makes one 8 x 4 loaf (24 slices)

Ingredients

all-purpose flour	2 cups
baking powder	1 tablespoon
bananas	2 to 3
egg	1
lemon juice	1 teaspoon
vegetable oil	1/2 cup
sugar	3/4 cup

Create-a-Flavor Changes

Add your own ideas, too!

Whole Wheat Banana Bread. Use 1 cup all-purpose flour and 1 cup whole wheat flour.

Banana Blueberry Bread. Stir in 1 cup blueberries before pouring batter into pan.

Banana Carrot Bread. Add 1/2 cup grated carrot with the oil.

Banana Cranberry Bread. Stir in 1 cup cranberries before pouring batter into pan.

Peanut Butter Banana Bread. Omit oil. Reduce sugar to 1/2 cup. Use only one banana. Add 1 cup peanut butter, 1 cup skim milk, and 1 cup raisins. To combine, add peanut butter to flour mixture, cutting in with pastry blender until mixture is crumbly. Add milk with egg. Stir in 1 cup raisins with flour.

Zucchini Bread. Omit bananas. Add 1 1/2 cups grated zucchini with oil.

To Prepare

1. Preheat oven to 350. Grease bottom only of 8 x 4-inch loaf pan.
2. Measure flour and baking powder into medium mixing bowl. Stir to combine ingredients. Set aside.
3. Peel bananas and break into pieces, placing them in a large mixing bowl. Crack egg into bowl. Add lemon juice. Mash and mix these ingredients together.
4. Add oil and sugar to banana mixture and stir to blend ingredients.
5. Stir flour mixture into banana mixture.
6. Pour batter into loaf pan.
7. Bake 50 to 60 minutes, until wooden pick inserted in center comes out clean. Cool 5 minutes in pan; remove from pan and cool on wire rack.

Equipment

measuring cups, measuring spoons, medium mixing bowl, large mixing bowl, wooden spoon, 8 x 4-inch loaf pan, oven, cooling rack

Gingerbread

Makes nine 3-inch squares

Ingredients

all-purpose flour	1 1/2 cups
baking soda	3/4 teaspoon
baking powder	3/4 teaspoon
cinnamon	1 teaspoon
ginger	1 teaspoon
sugar	1/2 cup
egg	1
shortening	1/4 cup
molasses	1/2 cup
hot water	3/4 cup

Create-a-Flavor Changes

Add your own ideas, too!

Whole Wheat. Use 1/2 cup whole wheat flour and 1 cup all-purpose flour.

Honey. Use 1/4 cup honey and 1/4 cup molasses.

Apple Gingerbread. Use one large or two medium apples. Pare, core, and cut apple into thin slices. Spread slices on top of gingerbread before baking.

To Prepare

1. Preheat oven to 325. Grease and flour a 9 x 9-inch pan.
2. Measure flour, baking soda, baking powder, cinnamon, ginger, and sugar into large mixing bowl; stir to blend ingredients.
3. Crack egg into a second bowl and beat. Add shortening, molasses, and hot water; stir to blend ingredients.
4. Pour egg mixture into flour mixture.
5. Pour batter into prepared pan.
6. Bake about 25 minutes, or until a toothpick inserted in center comes out clean.

Equipment

measuring cups, measuring spoons, large mixing bowl, medium mixing bowl, wooden spoon, 9 x 9-inch pan, oven

Popovers

Makes 6 popovers

Ingredients

eggs	2
all-purpose flour	1 cup
milk	1 cup
salt	1/2 teaspoon

Create-a-Flavor Changes

Add your own ideas, too!

Cheddar. Stir 1/2 cup finely shredded cheddar or Parmesan cheese into batter.

Herb. Stir 1 teaspoon minced garlic and 1/4 teaspoon oregano into batter.

To Prepare

1. Preheat oven to 450. Grease six muffin cups or 6-ounce custard cups.
2. Crack eggs into large mixing bowl. Beat slightly to mix.
3. Measure flour, milk, and salt into eggs. Beat just until smooth (don't overbeat).
4. Fill cups about half full.
5. Bake 20 minutes. Decrease oven temperature to 350; bake 20 minutes longer. Immediately remove popovers from cups; serve hot.

Equipment

measuring cups, measuring spoons, large mixing bowl, wooden spoon, oven, muffin pan or cups

Pancakes

Makes ten 4-inch pancakes

Ingredients

egg	1
skim milk	3/4 cup
vegetable oil	2 tablespoons
all-purpose flour	1 cup
sugar	1 tablespoon
salt	1/2 teaspoon
baking powder	1 tablespoon

Create-a-Flavor Changes

Add your own ideas, too!

Buttermilk Pancakes. Substitute 1 cup buttermilk for the skim milk. Decrease amount of baking powder to 1 teaspoon and add 1/2 teaspoon baking soda.

Whole Wheat Pancakes. Substitute whole wheat flour for the all-purpose flour. Substitute brown sugar for granulated sugar.

Buckwheat Pancakes. Substitute 1/2 cup buckwheat flour and 1/2 cup whole wheat flour for all-purpose flour.

Apple Pancakes. Stir 1/2 cup chopped apple into batter.

Blueberry Pancakes. Stir 1/2 cup blueberries into batter. Or add them as you go—after the first side cooks, drop a few blueberries onto the uncooked side; flip and continue cooking.

Broccoli Pancakes. Stir 1/2 cup finely chopped broccoli into batter.

To Prepare

1. In a large mixing bowl, beat egg.
2. Add remaining ingredients and stir with a spoon or whisk until batter is smooth.
3. Heat griddle or frying pan over medium-high heat. Pan is ready when a few drops of water bounce around.
4. Pour batter from a large spoon (about 1/4 cup per pancake); turn when puffed and full of bubbles, cooking second side until golden brown.
5. With a spatula, lift pancake from the griddle to a serving plate.

Equipment

measuring cups, measuring spoons, liquid measuring cup, large mixing bowl, wooden spoon or whisk, spatula, griddle or frying pan, stove, plate

Chapatis

Makes 12 small chapatis

Ingredients

whole wheat flour	2 cups
salt	pinch
vegetable oil	2 teaspoons
warm water	2/3 cup

To Prepare

1. Measure all ingredients in a large mixing bowl. Mix with a fork to combine. Keep mixing, using your hands to make a ball.
2. Knead the dough for about 10 minutes in the bowl. Let it rest for 30 minutes, covered with a damp cloth.
3. On a lightly floured surface, roll the ball into a 12-inch log and cut it into 12 chunks. Roll each chunk into a very thin circle, about 3 inches in diameter. Don't worry about making a perfect circle—just try to get it as thin as possible.
4. Heat a cast iron skillet on medium-high. Place one circle of dough on the skillet and cook for about 30 seconds or until brown spots and bubbles appear. Flip it over and cook for another 30 seconds.
5. As you finish each one, wrap in a cloth napkin to prevent drying.

Equipment

measuring cups, measuring spoons, liquid measuring cup, large mixing bowl, fork, damp cloth, cast iron skillet, spatula, stove, cloth napkin

Tortillas

Makes 15 tortillas

Ingredients

masa harina	2 cups
salt	1 teaspoon
warm water	1 1/2 cups

To Prepare

1. Combine masa harina and salt in a large bowl.
2. Gradually add water and mix with your hands until mixture forms a soft dough.
3. Form dough into 15 equal balls.
4. Using a rolling pin or tortilla press, flatten each ball into a thin 6-inch circle.
5. Cover tortillas with a moistened towel until ready to cook.
6. Fry tortillas in a dry pan over medium-high heat for about 3 minutes, turning once.
7. Remove from pan to plate. Serve warm.

Equipment

measuring cups, measuring spoons, liquid measuring cup, large mixing bowl, wooden spoon, rolling pin or tortilla press, moistened towel, cast iron skillet, spatula, stove

Whole Grain Crackers

Makes 6 dozen crackers

Ingredients

nuts	2 tablespoons
whole wheat flour	1/2 cup
all-purpose flour	1/2 cup
quick-cooking oats	1 1/2 cups
wheat germ	1/4 cup
sugar	1 tablespoon
water	2/3 cup
vegetable oil	2 tablespoons
water	2 teaspoons
salt	1/4 teaspoon

To Prepare

1. Preheat oven to 350.
2. Place nuts on cutting board; with a sharp knife, chop finely.
3. Measure flours, oats, wheat germ, nuts, and sugar in a large bowl. Stir to combine ingredients.
4. Measure 2/3 cup water; add to the flour mixture. Add oil. Stir just until dry ingredients are moistened.
5. Divide dough in half.
6. Place each half of the dough on an ungreased baking sheet and pat into a 12-inch square. Cut into 2-inch squares.
7. Sprinkle or brush each half of the dough with 1 teaspoon water. Sprinkle evenly with half of the salt (1/8 teaspoon).
8. Bake 20 to 25 minutes or until crisp and lightly browned. *If the edge crackers brown too quickly, remove them and continue baking remaining crackers.*
9. Separate crackers and remove from baking sheet. Cool on wire racks. Store in an airtight container.

Equipment

cutting board, sharp knife, measuring cups, measuring spoons, liquid measuring cup, large mixing bowl, wooden spoon, baking sheets, oven



Food Activities

Reading Recipes



These activities are designed to help youth learn skills related to interpreting recipes and following directions. The Sample Cooking Program (page 13) includes the first three:

Session 2—Measure Up!

Session 4—Prepare Ahead

Session 6—Whatzit?

Measure Up!

- Standard tools provide accurate measuring.
- Supplies: standard and nonstandard measuring tools

Collect an assortment of standard measuring tools (teaspoons, tablespoons, liquid and dry measuring cups) and tableware (teaspoons, tablespoons, cups). Set up stations to compare measuring flour and water using the two sets of tools. Use the standardized tools to discover relationships such as the number of teaspoons in a tablespoon; tablespoons in $\frac{1}{4}$ cup; cups in a quart. Read several recipes to identify different types of measurements.

Talk about: What differences are observed? When is standardized measuring more or less important? What measurements are the same? When do you need to use two or more tools for one measurement? What abbreviations are used for measurements? How much is a pinch? For a historical perspective, compare the measurements in recent cookbooks to those written in previous generations.

Prepare Ahead

- Ingredient lists sometimes include preparation steps.
- Supplies: recipes

Read several recipes and identify any preparation steps included in the list of ingredients. List at least five different examples.

2 tablespoons melted butter

1 egg, lightly beaten

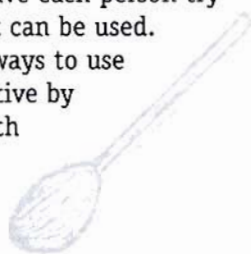
$\frac{1}{2}$ cup grated cheese

1 4-ounce can crushed pineapple, drained

Whatzit?

- Kitchen tools are used for specific tasks.
- Supplies: a variety of kitchen tools

Collect an assortment of common and not so common tools (or have the youth collect them). Some are for very specific tasks; others can be used in a variety of ways. Pass the tools around and have each person try to identify the tool and one way it can be used. Continue passing and identifying ways to use the tools. Add a historical perspective by contrasting the newest gadgets with some from past generations.



Comparing Baking Pans

- Baking pans are available in different sizes, shapes, and materials.
- Supplies: baking pans, liquid measuring cup, ruler

Collect a variety of muffin and loaf pans to compare. How are they similar and different? Use a ruler to compare pan sizes. Use liquid measuring cups and water to compare pan volumes. Is it possible to substitute one pan for another? Why would muffins bake faster than a loaf of bread? Why would batter in a glass pan bake faster than in a metal pan?

How Much?

- Different units of measure are used in recipes.
- Supplies: recipes

Read several recipes to find different ways the amount of an ingredient is expressed.

volume (teaspoon, cup)

weight (ounces, pounds)

number (3 carrots, 1 egg)

Do any recipes give the amount in more than one way?

Matching Tools and Ingredients

- Kitchen tools are used for specific tasks.
- Supplies: dry and liquid measuring spoons and cups

Collect dry and liquid measuring tools: liquid measuring cup, dry measuring cup, measuring spoons. Pass each around and have each person name an ingredient that could be measured with it, giving any special directions for measuring (e.g., lightly spoon in flour; firmly pack brown sugar; pour vanilla into spoon away from mixing bowl).

Measuring Liquids

- Use liquid measuring cups correctly.
- Supplies: 1-cup measuring cups for liquid and dry ingredients

Compare the two types of 1-cup measuring cups. How are they alike and different? Look at the design of a liquid measuring cup. How many lines are marked on the side? What units do they measure? How do the units (cup, ounce, and milliliters) compare? Why is it important to read the marker line at eye level? Does the cup have a spout? Practice using a liquid measuring cup with water. Compare measuring water with both types of cups. What do you observe?

Parts of a Recipe

- Recipes contain different types of information.
- Supplies: recipes

Read several recipes. What types of information do they give? (name, ingredient list, directions, yield) Are they all the same? How are some easier to read than others? Find a recipe that you could improve by reorganizing the information.

Mixing It Up Charades

- Recipes include a sequence of preparation steps.
- Supplies: equipment to make muffins, slips of paper with steps of muffin preparation

Prepare a tray with all the equipment, but not the ingredients, needed to make a muffin recipe. Give each person (or group) a slip of paper with one step of the preparation directions. Have them take turns using the appropriate equipment and hand motions to act out each preparation step while the others try to guess what is being done. At the end, have the group line up in the proper sequence of steps. What would happen if you didn't follow the correct sequence of steps? What would happen if you didn't have all the tools?

Name It!

- Recipe titles vary in style and content.
- Supplies: recipes

Read several muffin recipes (or recipes for other quick breads) and compare the names. Which ones do you like best? How are they similar or different? How might you rename one? How does the name motivate you, or not, to try the recipe?

Step by Step

- Recipes are written in different formats.
- Supplies: recipes

Read several recipes and compare the way directions are written (numbered steps; written in a paragraph; ingredients and directions written together in paragraphs).

Which way is easier to follow? Why is it important to read recipes all the way through before starting?

Tooling Up

- Read recipes carefully to know what tools to use.
- Supplies: recipes, kitchen tools (optional)

Read several recipes, making a list of all the tools, then group them into task categories—measure, mix, cut, separate, bake, or cook. Or do this with actual tools you have collected. What ones can be substituted for others? Which are the most essential? Why would you want to gather all the tools before you start cooking?

Keep It Safe



These activities are designed to help youth learn skills related to practicing food and kitchen safety. The Sample Cooking Program (page 13) includes the first three:

Session 1—Clean Hands Role Play

Session 3—In the Kitchen

Session 5—Where It Goes Relay

Clean Hands Role Play

- Keeping hands clean keeps food safe to eat.
- Supplies: none

To role-play, tell youth: Close your eyes. Imagine a sink in front of you. I'm going to time you as you wash your hands. When I say "start," soap up with your imaginary soap and start washing your hands. When you think your hands are clean enough, raise your hand but keep your eyes closed until I say to open them.

Talk about: How many washed for at least 20 seconds? What parts of your hand need special attention? When should you rewash hands? Why is it important to keep your hands clean when handling food?

Practice washing hands correctly again, while singing "Row, Row, Row, Your Boat." Singing this song two times really fast takes about 20 seconds.

In the Kitchen

- Kitchen tools must be handled safely.
- Supplies: several recipes, kitchen tools (optional)

Divide into pairs or groups to read recipes and brainstorm safety rules. Identify tasks in recipe directions that require knowledge of these rules. Some examples:

- Slice carrots. (Always use a sharp knife.)
- Toast bread. (Hold the plug when unplugging appliances.)
- Bake 20 minutes. (Turn off the oven immediately when done.)

Talk about: How many preparation steps require knowing something about safety? Are safety precautions ever explained in recipes? Why is it important to handle tools correctly? What kinds of accidents can happen in a kitchen?

Where It Goes Relay

- Proper storage keeps food safe and limits food waste.
- Supplies: two sets of grocery bags with variety of baking ingredients

Fill two grocery bags with ingredients used to prepare one or more recipes for muffins or other quick breads. Try to include a variety of forms such as canned, frozen, and fresh. Make signs to identify several storage places in a kitchen (refrigerator, counter, cupboard, under the sink, by the stove). Form two relay lines with each grocery bag. Each person chooses an item from the bag, "puts it away," and tags the next person. Continue until both groups are finished.

Talk about: What are good or poor storage places? What makes a good storage place? (temperature, humidity, light) Is more than one place acceptable? How do storage places change or not after packages are opened? What storage places have limited space? How does space affect what you buy? Why is proper storage of ingredients important?

Germ Attack

- Keeping hands clean keeps food safe to eat.
- Supplies: vegetable oil or Vaseline; cinnamon or paprika; sink for washing hands, towels

Tell each person: Rub a little vegetable oil into your hands, so they are coated thoroughly. Then sprinkle cinnamon on your hands and rub it in. Next divide up the group to wash hands with these variations: with soap, without soap, cold water, hot water, 10 seconds, 20 seconds. Or repeat the activity with everyone trying several variations.

Talk about: What do you observe? Is any cinnamon still on your hands? How easy is it to get rid of it all? How hard do you have to rub? Does the temperature of the water make a difference? Did soap make a difference? The oil helps the cinnamon cling to your hands. That's what germs do, too. Germs are so tiny we can't see them and they can cling between fingers and under fingernails.

Germ Attack (another way)

- Keeping hands clean keeps food safe to eat.
- Supplies: Glo Germ*, UV lamp, sink for washing hands, towels

Put a few drops of Glo Germ on your hands and rub it all around. Wash your hands and dry them with a clean towel (or paper towels). Hold your hands under the UV lamp. You will see any remaining Glo Germ under the light.

Talk about: What are germs? Can you see germs? What do you have to do to rid of germs? Real germs don't "light up" like Glo Germ. Glo Germ is a commercial product that contains tiny plastic particles that glow when exposed to ultraviolet light. It does not contain radioactive phosphorus or metal such as mercury or lead. It's safe to use.

* Glo Germ is available from Glo-Germ Company, P.O. Box 537, Moab, Utah 84532; phone 800-842-662.

Prepare to Fight BAC!

- Keeping a clean kitchen keeps food safe to eat.
- Supplies: Fight BAC! poster or handout (optional)



Divide in pairs or groups to brainstorm a list of kitchen rules to keep food safe. Write each rule on an index card. Some examples:

Wash hands before handling food.

Keep backpacks off the counters.

Cover garbage.

Drink from a glass, not the milk jug.

Clean the can opener after each use.

Wipe spills off the floor.

Control flies and other insects.

Tie hair back, if long.

Wash hands after petting the cat.

Compare each group's list, sorting cards into piles by rules.

Talk about: How many rules did you come up with? What rules were most common? Are they easy to follow? How does each rule help to keep food safe to eat? Compare your list of rules with the four steps in the Fight BAC! campaign—clean; separate; cook; chill. Where do they fit? Fight BAC! is a national campaign to prevent illness from bacteria in food. Create your own campaign poster from your list of food safety rules.

Turning on the Heat

- Know how to operate an oven safely.
- Supplies: stove, oven thermometer, baking soda

Examine the parts of your stove and know how to use it safely.

Talk about: What kind of stove is it? How do you turn the oven on and off? What is the hottest setting on the dial? What is the lowest? How can you check the temperature of the oven? What might happen if you don't use a timer when you bake? What are the temperature settings for the burners? Why is it important to turn the oven or burners off as soon as you remove whatever is cooking? Why should an adult always be in the house when children use the stove? What should you do if a fire starts on a burner or in the oven?

Ingredient Science

Iron Attraction

Experiment 1

Supplies

oatmeal (single packet), with “reduced iron”
plastic cup (any nonmetallic container)
magnet, pencil, tape
plastic sandwich bag
white paper

What to Do

- Tape magnet to one end of pencil.
- Pour cereal in the cup.
- Wrap sandwich bag around the magnet.
- Stir cereal about a minute, holding bag against pencil.
- Pull bag-covered pencil out of cereal.
- Hold it over paper and remove pencil.
- Shake the bag over paper.
- Move the magnet back and forth under paper.
What happens?

Experiment 2

Supplies

Total™ cereal (or highly fortified cereal)
water
2-cup container (not metal)
magnetic stir bar*
wooden spoon

What to Do

- Pour about 1 cup of cereal in container.
- Fill container about half full of water.
- Drop in magnetic stir bar.
- Stir with wooden spoon 5 to 10 minutes.
- Remove the stir bar and examine it. *What do you observe?*

*Available from science supply stores or catalogs.

What's Happening

The magnet (or stir bar) attracts tiny black particles of iron. This iron is changed by acid in the stomach to a form that is absorbed into the body. *If no iron appears, check the label. It must say “reduced iron,” “iron,” or “electrolytic iron.” The iron in iron salts won't be attracted to the magnet.*

Compare Recipes

Collect several recipes for muffins (or other quick bread). Read and compare the ingredients. What ingredients commonly found in muffins are sources of iron? How can you change recipes to add more iron?

Compare Labels

Collect several muffin (or other quick breads) packages. Read and compare the ingredient and nutrition labels, looking for information about iron. What is the chemical form of added iron? What other ingredients might add iron? How much iron is in one serving? What unit of measure is used for iron? How much iron does your body need? Why do you need iron?

For more information see Fast Facts about Ingredients on pages 64–65.

Ingredient Science

Mystery Whites

Experiment 1

Supplies

flour, sugar, salt
baking powder, baking soda
water, vinegar
magnifying lens
scrap paper

What to Do

- For a mystery test, label samples by code in advance.
- Place samples of ingredients on paper.
- Feel and look at each sample.
- Examine samples with magnifying lens.
- Add a drop of water to each sample.
- Place new samples on the paper.
- Add a drop of vinegar to each sample.

What do you observe? How are the samples alike or different? Can you identify them?

Experiment 2

Supplies

cornstarch, sugar
flour, rolled oats, white cornmeal
iodine, water, cup
newspaper or aluminum foil

What to Do

Handle iodine carefully to avoid staining and throw away all food samples. Iodine is poisonous.

- Place a pinch of cornstarch and sugar on newspaper or aluminum foil.
- Add a drop of iodine to each sample. *What happens? What nutrient can you identify with iodine?*
- Place a pinch of other ingredients on newspaper or aluminum foil.
- Add a drop of iodine to samples.

What happens? Which ones contain starch?

What's Happening

Experiment 1

Dry and wet ingredients interact during mixing and baking, creating physical and chemical changes. Each ingredient brings unique physical and chemical properties to the batter or dough. Examples you can observe: Sugar dissolves more easily in water than salt does. Sugar and salt are distinctly shaped crystals; flour isn't. Vinegar added to baking soda produces carbon dioxide; water doesn't. Either water or vinegar added to baking powder produces carbon dioxide.

Experiment 2

Iodine reacts with starch to produce a dark blue-black color. Iodine is an *indicator* for starch because it creates a chemical reaction that is observed by a color change. If no starch is present, the color doesn't change.

For more information see Fast Facts about Ingredients on pages 64–65.

Ingredient Science

Sifting through Fiber

Experiment 1

Supplies

all-purpose flour
whole wheat flour
rye flour, cornmeal, or other whole grains
sifter or fine mesh strainer
newspaper or scrap paper

What to Do

- For a mystery test, label samples by code in advance.
- Place a little all-purpose and whole wheat flour on paper.
- Feel and look at each sample.
- Rub a little between your fingers.
- Place a little in sifter and gently shake. *What happens? What is left in the sifter?*
- Compare other flours, meals, and grain products to the first two flours.

How are they alike or different? Which do you think have the most fiber?

Experiment 2

Supplies

wheat or other whole grain
two flat stones or mortar and pestle

What to Do

- Rub the grain back and forth between the stones to remove the outer hulls.
- Blow away hull particles as they are removed.
- Continue grinding the grain into flour.

What do you observe? How easy is it to make flour? How is flour produced commercially?

What's Happening?

Experiment 1

Whole wheat flour contains fiber that's not in all-purpose flour. Whole grain flours are often coarser, so some particles won't go through the sifter. Texture of the flour isn't a foolproof way of identifying fiber.

Experiment 2

It takes a lot of time and muscle power to produce flour by hand. Commercial mills produce flour to specific standards.

Compare Labels

Collect several labels from flours, grain products, and quick bread mixes. Read and compare the ingredient and nutrition labels, looking for information about fiber. What unit of measure is used for fiber? What types of flours contain the most fiber? How much fiber is recommended? What ingredients other than flours or grains add fiber?

Compare Recipes

Collect several recipes for muffins (or other quick breads). Read and compare the ingredients. What ingredients commonly found in muffins are sources of fiber? How can you change recipes to add more fiber?

For more information see Fast Facts about Ingredients on pages 64-65.

Ingredient Science

Inflating Reactions

Experiment 1

Supplies

baking soda
vinegar
balloon, funnel, teaspoon
bottle with small neck (juice or soda)

What to Do

- Pour a little vinegar in the bottle.
- Stretch the balloon over the bottom of the funnel, or have another person stretch the neck of the balloon.
- Spoon 1 teaspoon baking soda into funnel; it will then fall into the balloon.
- Stretch balloon over the bottle opening.
- Shake balloon so soda falls into bottle.

What happens? What was created?

Experiment 2

Supplies

baking powder
baking soda
cream of tartar
water
paper towel

What to Do

- Place a pinch of each ingredient on a paper towel.
- Add a few drops of water to each. *What happens?*
- Combine a pinch of baking soda with cream of tartar.
- Add a few drops of water. *What happens? What can you say about these three leavening agents?*

Experiment 3

Make a favorite recipe with homemade baking powder. Replace each 1 teaspoon of baking powder with a mixture of 1/2 teaspoon cream of tartar and 1/4 teaspoon baking soda.

What's Happening?

Experiment 1

The reaction that causes the balloon to expand is the same one that causes muffins to rise. Vinegar (an acid) mixes with baking soda (a base) to create carbon dioxide gas. Thousands of tiny gas bubbles expand the volume of batter. Oven heat increases the leavening action.

Experiments 2 and 3

Baking powder (contains acid and base) produces carbon dioxide gas when combined with water or any liquid. Baking soda (a base) and cream of tartar (an acid) produce carbon dioxide only if they are combined. That's the origin of early baking powders. It's important to mix and bake the batter quickly because the gas is released faster and sooner than with commercial double-acting baking powders.

For more information see Fast Facts about Ingredients on pages 64-65.

Ingredient Science

Finding Fat

Experiment 1

Supplies

brown paper bags or towels
eyedropper, cotton swabs, spoon
water, vegetable oil
pencil
foods to test (ingredients in bread recipes)

What to Do

- Drop a couple of drops of water on the paper; draw a circle around it.
- Drop a couple of drops of oil on the paper; draw a circle around it and label it "oil."
- Wait a few minute for the spots to dry.
- Hold the paper up to the light and compare the circles. *What do you observe?*
- Choose a food to test; predict whether it contains fat. Apply samples to paper with eyedropper, swab, or spoon. *What do you observe? What ingredients add fat?*

Experiment 2

Supplies

cream
skim milk
2 containers with tight-fitting lids

What to Do

- Fill one container half full of cream.
- Fill the other container half full of milk.
- Be sure lids are on tight.
- Shake both containers for about 7 minutes. *What do you observe? What happened to the liquids? Why did this happen?*

What's Happening?

Experiment 1

Water leaves a spot on the brown paper, but it disappears when the paper is dry. Fat makes a spot that stays on the paper.

Experiment 2

Cream turns into butter when shaken, but skim milk doesn't. Cream contains more butterfat than whole milk; skim milk has all but a trace of butterfat removed.

Compare Labels

Collect several labels from milk, cheese, and yogurt products. Read and compare the ingredient and nutrition labels, looking for information about fat. What unit of measure is used for fat? What form of milk contains the least fat?

Collect several labels from muffin mixes (or other bread mixes). Read and compare the ingredient and nutrition labels, looking for information about fat. How do the mixes compare? Is the serving size the same or different? Are different brands the same or different? Do different types of breads have more or less fat? What ingredients add fat or limit the fat content?

Compare Recipes

Collect several recipes for muffins (or other quick breads). Read and compare the ingredients. What ingredients commonly found in muffins are sources of fat? How can you change recipes to limit fat?

For more information see Fast Facts about Ingredients on pages 64–65.

Ingredient Science

Calorie Connections

Experiment 1

Supplies

masking tape, chalk, or scrap paper
ruler, paper, marker
9 people (or milk jugs or other objects)

What to Do

- Mark off 3 spaces of equal area (3–4 feet). Each represents one gram of weight.
- Label spaces—carbohydrate, protein, or fat.
- Each person (or object) represents one calorie.
- Start with the carbohydrate space. How many people are needed to represent the number of calories in one gram?
- Repeat, moving through the three spaces to symbolize the number of calories per gram of nutrient. Allow youth to work through the activity a few times on their own. Provide clues with food labels or hints for adjusting their guesses.

How many people are in each space? What's the situation in each space? Which contains the most calories? Which nutrient is the most concentrated source of calories? One gram of carbohydrate or protein contains 4 calories; one gram of fat contains 9 calories.

Experiment 2

Supplies

watch or stopwatch
pencil, paper

What to Do

- Find a pulse by placing middle and index fingers over wrist. Count the pulsing beats for one minute. *Record the number of beats.*
- Jump or run in place for 1 minute.
- Find pulse; count for 1 minute. *How do the two pulse rates compare?*
- Jump or run in place for 5 minutes.
- Find pulse; count for 1 minute. *How do the three pulse rates compare?*
- Repeat pulse count for another minute.

How does the last count compare to the first count? What causes the rates to increase or decrease? Why does physical activity increase pulse rate? What does a pulse rate measure? How do the rates of different people compare? What could explain the differences among people?

What's Happening?

Experiment 1

Carbohydrate and protein contain 4 calories per gram; fat contains 9 calories. Fat is a more concentrated source of energy because it contains more calories per gram than carbohydrate or protein.

Experiment 2

The pulse occurs as the heart pumps blood to all parts of the body. This process takes energy, even when the body isn't moving. For youth ages 9 to 12, the average resting pulse rate is 70 to 100 beats per minute. Jumping or running takes more energy than sitting. The pulse rate increases because the heart works harder.

How soon a pulse returns to the resting rate after aerobic activity is a measure of physical fitness.

Compare Labels

Collect labels from bread and cake mixes. Read and compare the ingredient and nutrition labels, looking for information about calories and the nutrients that provide calories. How do the mixes compare? Is the serving size the same or different? Do different types of mixes have more or fewer calories? Do preparation directions suggest ways to limit calories? How are muffins and cupcakes alike or different?

For more information see Fast Facts about Ingredients on pages 64–65.

Storybooks about Bread

Bread Bread Bread

by Ann Morris, photographs by Ken Heyman. New York: Scholastic, 1989.

From fat loaves for sale by the wall of the Old City of Jerusalem to sliced bread with peanut butter and jelly in the hands of a U.S. child, this photographic tour is a cultural feast. How it looks and how it's made may differ, but people all over the world eat bread.

Bread and Jam for Frances

by Russell Hoban, illustrated by Lillian Hoban. 1964. Reprint. New York: HarperCollins Trophy, 1986.

Frances is a young badger who wants only bread and jam at every meal. When that is what she gets, Frances reconsiders her choice.

Bread Is for Eating

by David and Phillis Gershtator, illustrated by Emma Shaw-Smith. New York: Henry Holt, 1995.

When a child leaves bread on his plate, his mother reminds him that "bread is for eating." In song and story she celebrates bread and the people who make it. The rhythmic, bilingual text comes to life with illustrations that depict a variety of peoples and breads.

Everybody Bakes Bread

by Norah Dooley, illustrations by Peter J. Thornton. Minneapolis: Carolrhoda Books, 1996.

It's a rainy Saturday and Carrie is bored. Her mom sends her out into the neighborhood in search of a three-handled rolling pin. She returns, not with the rolling pin but with stories and tastings of bread being baked in the multiethnic neighborhood. Recipes are included: coconut bread, chapatis, corn bread, pocket bread, challah, pupusas, and Italian bread.

If You Give a Moose a Muffin

by Laura Joffe Numeroff, illustrated by Felicia Bond. 1991. Reprint. New York: Scholastic, 1992.

It begins with a muffin and ends with a muffin. But in between, this story is just a rollicking good time. Enjoy!

If You Give a Pig a Pancake

by Laura Joffe Numeroff, illustrated by Felicia Bond. New York: HarperCollins, 1998.

Pancakes and syrup go together. But that only ignites the fun in this "circular story" about an energetic little pig and an accommodating little girl.

Jalapeño Bagels

by Natasha Wing, illustrated by Robert Casilla. 1988. Reprint. New York: Atheneum Books for Young Readers, 1996.

Pablo's parents own a bakery and he is helping to make the pan dulce (Mexican sweet bread), empanadas de calabaza (pumpkin turnovers), chango bars, bagels, and challah (Jewish braided bread). He is also trying to decide what to take to the school for International Day. By telling about traditional foods, this warm family story celebrates the blending of Mexican and Jewish cultures. Recipes for chango bars and jalapeño bagels are included.

Justin and the Best Biscuits in the World

by Mildred Pitts Walter. 1986. Reprint. New York: Bullseye Books, 1991.

Ten-year-old Justin can't seem to do anything right. All that changes when he spends time on his Grandpa's ranch, where he learns how to mend fences, catch fish, and handle horses. And he learns other equally important work—how to make his Grandpa's prize-winning biscuits. A warm family story for intermediate readers, this book reveals much about the history of African American cowboys in the United States.

Make Me a Peanut Butter Sandwich and a Glass of Milk

by Ken Robbins. New York: Scholastic, 1992.

Sandwiches are a favorite American way to use bread. Where does bread *really* come from? Through photographs and simple text, the reader will follow wheat from field to packaged bread, as well as the making of peanut butter and milk. This behind-the-scenes production tour ends in your kitchen with a peanut butter sandwich and a glass of milk!

Pancakes for Breakfast

by Tomie DePaola. New York: Harcourt Brace Jovanovich, 1978.

In this book without words, the reader follows a country woman as she goes about gathering each ingredient to make pancakes. As she dreams about eating a nice big stack of pancakes, her pets are into mischief but her neighbors come to the rescue. A recipe for pancakes is included.

The Sleeping Bread

by Stefan Czernecki and Timothy Rhodes, illustrated by Stefan Czernecki. 1992. Reprint. New York: Hyperion Books for Children, 1993.

Beto works from dawn to dusk filling a small Guatemalan village with the smell of fresh baked bread. He is a kindly baker who befriends a ragged beggar. Then one day, the bread fails to rise. The fable-like story reveals the foolishness of the villagers and imparts a timeless message about friendship.

Tony's Bread

by Tomie dePaola. New York: G. P. Putnam's Sons, 1989.

In this delightful folktale, the reader learns how the Italian bread *panettone* came to be. Tony the baker dreams that one day he'll become the most famous baker in all of northern Italy. His daughter Serafina has a dream of her own. Father and daughter seem far from their dreams until one day a stranger comes to town.

Three Stalks of Corn

by Leo Politi. 1976. Reprint. New York: Aladdin Books, 1994.

In this warm family story, a little girl and her grandmother carry on the traditions of their Mexican heritage. Angelica learns not only how to make tortillas, tacos, and enchiladas from her grandmother but also the legends that reveal the significance of corn to her people. Recipes for tacos and enchiladas are included.

Create Conversations

After reading, ask questions to relate the story to cooking and eating experiences. Here are two examples:

Justin and the Best Biscuits in the World

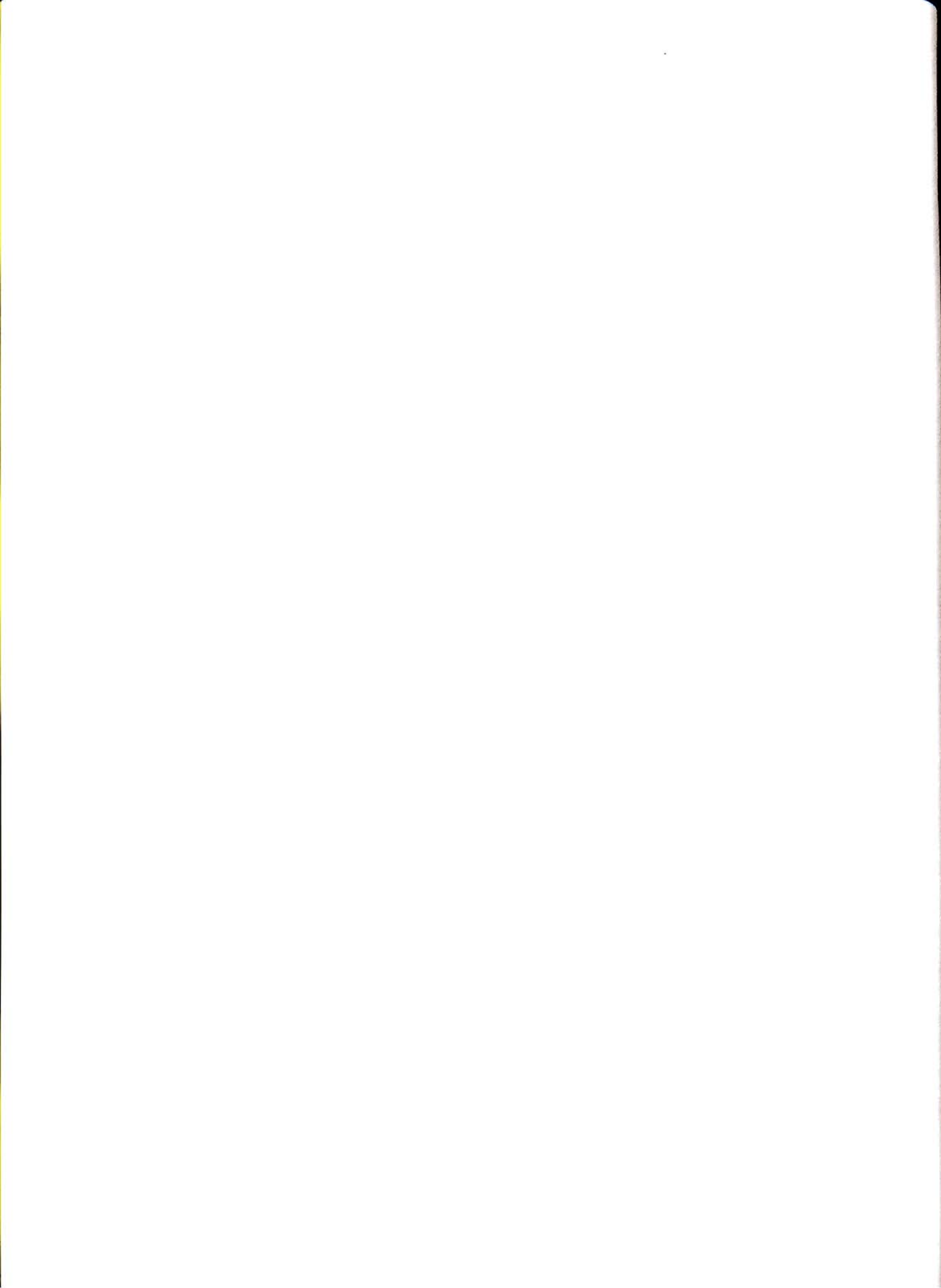
- What does Justin learn from his Grandpa?
- What was Grandpa's secret for good biscuits?
- What biscuits and other breads do you enjoy eating?
- What foods have you learned to make?
- How did you learn to make them?

Three Stalks of Corn

- How does grinding corn change it?
- How do Angelica and her grandmother share their traditions?
- How does your family share traditions related to food?
- How are a tortilla and a slice of bread alike? How are they different?



More Information



Introducing the Food Guide Pyramid

The Food Guide Pyramid puts the messages of the Dietary Guidelines into a picture. It emphasizes variety and moderation. No one food group is more important than another—for good health you need them all. The Dietary Guidelines are the best, most up-to-date advice from nutrition scientists.

The Pyramid Message

The Food Guide Pyramid suggests eating a variety of foods that together give you all the nutrients you need to maintain health without eating too much fat or sugar. It is not a rigid prescription but a general guide that lets you choose a healthful diet that is right for you.

The Pyramid Shape

The pieces of the pyramid represent both the basic five food groups and the extra fats, oils, and sweets that people commonly eat. The size of each piece indicates the relative amounts to eat. For example, grain, which forms the base, is the largest and has the greatest number of recommended servings.

Small triangle and circle shapes fill the top section of the pyramid. The triangles represent added sugars. The circles represent added and naturally occurring fat and oil. A scattering of these symbols throughout the pyramid indicates that some choices within the five food groups can also be high in fat or added sugars.

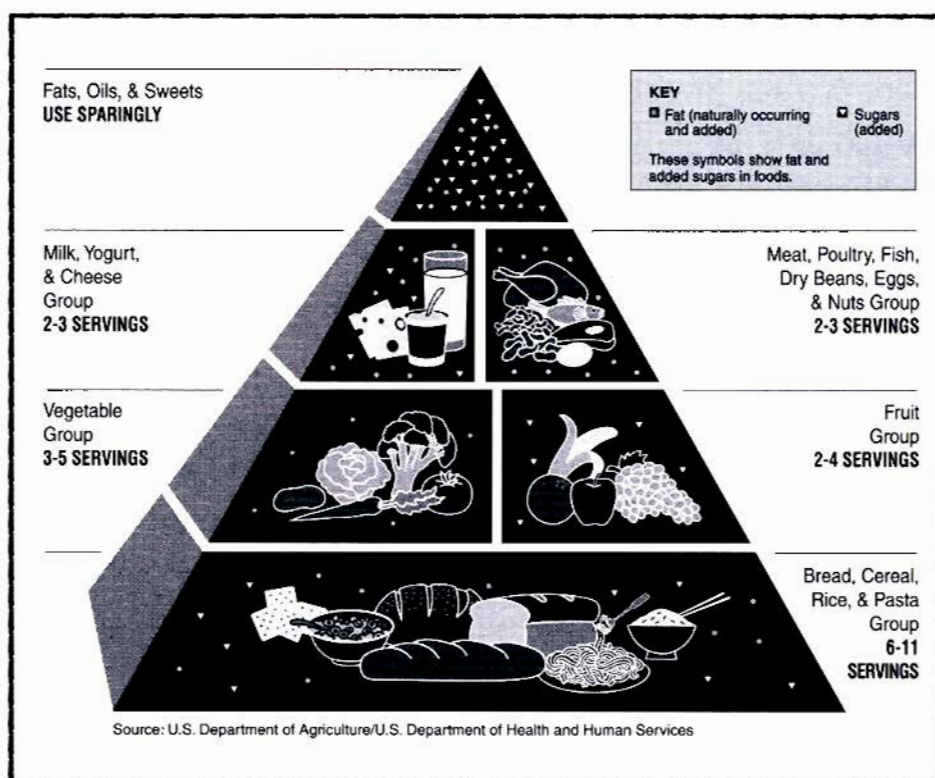
Selections from the food groups fit together like a puzzle to form a healthful overall diet. The first three pieces contain plant foods and should provide the majority of your food choices.

Piece 1: Grains

Choose plenty of grains. Bread, cereal, rice, and pasta form the broad base of the pyramid and should be eaten often. These foods contain lots of complex carbohydrates (starch) and provide many other nutrients as well. The exact mix of nutrients depends on the individual food selected. Whole grain products contain B vitamins and iron; others are often enriched or fortified with these nutrients. Whole grain products are good sources of fiber.

Piece 2: Vegetables

Vegetables contain vitamins, minerals, and fiber. They are naturally low in fat, but you will need to limit fat added during cooking and at the table. Choosing several different vegetables—dark green (spinach, broccoli), deep yellow (carrots, sweet potatoes), starchy (potatoes, corn), and others (tomatoes, lettuce)—will give you a wide variety of nutrients and possible health benefits.



Piece 3: Fruits

Fruits and fruit juices contain important vitamins and minerals. Fresh fruits are good sources of fiber. Choosing fruit canned or frozen in natural juices instead of heavy syrups will limit added sugar. Beverages labeled as "juices" contain more natural juice than those labeled as a "drink" or "cocktail." Choosing several different fruits and juices will provide a wide variety of nutrients.

Piece 4: Milk

Milk products contain protein, vitamins, and minerals. Milk, yogurt, and cheese are the best sources of calcium (a mineral). To limit fat, choose nonfat or low-fat products.

Piece 5: Meat

Meat, poultry, and fish are rich sources of protein, B vitamins, iron, and zinc. The other foods in this group—dry beans, eggs, and nuts—also contain protein, vitamins, and minerals. To limit fat, choose lean meats and prepare them in low-fat ways (broil, roast, grill, stir-fry). Removing the skin from poultry is another low-fat cooking technique.

Piece 6: Fats, Sweets

The small tip of the pyramid represents the fats, oils, and sugars added to foods. Both sugar and fat provide calories. Foods such as butter, margarine, oil, and salad dressing are often added during cooking or at the table. To reduce unneeded calories, limit the amount you add to foods.

Other foods in this category such as soft drinks and candies are often eaten as snacks. It is all right to eat them once in a while, but they shouldn't crowd out other foods that have more nutrients.

Piecing It Together

Remember to

- choose plant foods (grains, vegetables, and fruits) often.
- choose a variety of foods in each piece of the pyramid.
- choose lower-fat foods from each piece of the pyramid.
- choose lower-sugar foods from each piece of the pyramid.
- limit choices from the tip of the pyramid.

Nutrients and What They Do

Food Group	Key Nutrients*	Action in the Body
Grains (<i>bread, cereal, rice, pasta</i>)	Complex carbohydrate, fiber, iron, B vitamins (<i>niacin, riboflavin, thiamin, folic acid</i>)	Carbohydrate is the body's major source of energy. B vitamins help in the body's use of energy. Fiber aids the movement of food through the digestive tract. Iron carries oxygen in red blood cells and muscle cells.
Vegetables	Vitamin A, vitamin C, folic acid (a B vitamin), iron, magnesium, fiber	Vitamin A helps maintain skin and mucous membranes and aids in vision. Vitamin C helps the body heal and fight infections. Folic acid is needed for healthy blood cells and is important for cell division such as in pregnancy and growth. Magnesium is found in bones and is important for muscle and nerve functioning.
Fruits	Vitamin A, vitamin C, potassium, folic acid (a B vitamin), fiber	Potassium maintains the heartbeat, regulates body fluids, and is needed for muscle and nerve functioning.
Meat (<i>meat, poultry, fish, dry beans, eggs, nuts</i>)	Protein, iron, zinc, B vitamins (<i>thiamin, riboflavin, niacin, vitamin B-12</i>)	Protein provides the building blocks needed for growth, replacement, and maintenance of body tissues. Zinc is necessary for healing, taste perception, growth, and sexual development.
Milk (<i>milk, yogurt, cheese</i>)	Calcium, riboflavin (a B vitamin), protein	Calcium is needed for the development and maintenance of healthy bones and teeth. Riboflavin is a B vitamin that helps the body use energy.
"Use Sparingly" (<i>not a food group</i>)	Simple carbohydrates	Simple carbohydrates or sugars provide energy but few other nutrients. Fat is a source of energy and helps in the absorption of certain vitamins.

*There are more than 40 different nutrients with many different functions that are required for good health. Many of these functions are interrelated. Each food group contributes many other nutrients in addition to the "key nutrients" listed here.

Adapted with permission from Connie Liakos Evers, *How to Teach Nutrition to Kids* (Tigard, Ore.: 24 Carrot Press, 1995).

A Cook's Guide to Cleanliness

Step-by-Step to Clean Hands

- Use warm water and soap to create a sudsy lather on your hands.
- Rub hands together for at least 20 seconds.
- Wash hands thoroughly. Work soapsuds in between fingers and around fingernails.
- Rinse the suds off your hands with warm water.
- Finally, dry hands completely on clean paper towels or your own personal towel. Shared towels may spread germs.

The 20-Second Handwashing Rap

(Words in heavy type carry the stronger beat.)

You **gotta'** wash your **hands**, and
You **gotta'** wash 'em **right**,
Don't **give** in to **germs**
Without a **fight**

Use **water** that's **warm**
And **lots** of soapy **bubbles**,
These are your **weapons**
for **preventing** germ **troubles**.

Don't **cut** your time **short**
your **fingers**—get **between**,
It **takes** twenty **seconds**
To **make** sure they're **clean**

Gotta' **wash . . . gotta' wash**
Gotta'—**wash**—your—**hands**,
Gotta' **wash . . . gotta' wash**
Gotta'—**wash**—your—**hands**.

Source: *Operation Risk* (East Lansing: Cooperative Extension, Michigan State University, 1993).

When to Rewash Hands

- After using the bathroom
- After blowing your nose, coughing, or sneezing on your hands
- After touching pets
- After touching a cut or open sore
- After handling raw meat, fish, poultry, or eggs

More Tips for Safe Food Handling

- Pull long hair back away from the face.
- Bandage open cuts and sores on hands
- Keep counters clean with soap and water.
- Use clean washing and drying cloths.
- Wash knives, cutting boards, and any utensil used with raw meat, poultry, and fish before using them with other foods.

A Bit about Bacteria

Anyone who cooks must deal with an invisible enemy—bacteria—so microscopic that you can't see, smell, or taste it. But bacteria also are so powerful they can cause severe sickness or even death. Anyone who handles food needs to know how to "Fight BAC." That's the slogan for a new public education campaign to prevent foodborne illness.

Bacteria are present naturally in foods. People who handle food can add bacteria by using unclean hands, cutting boards, utensils, countertops, and dish towels. Cleanliness keeps the amount of bacteria as low as possible. Fewer bacteria results in less risk of illness.

Bacteria do not grow well under 40 degrees F or above 140 degrees F. Thorough cooking helps to destroy bacteria in foods. For ground meat, that means cooking to at least 160 degrees F. Recipes that include raw eggs or partially cooked eggs should be avoided. Although bacteria can hitch a ride on any food, more perishable foods—meat, poultry, fish, eggs, and dairy products—require special attention.

Four Steps to Fight BAC

1. Clean: Wash hands and surfaces often.
2. Separate: Don't cross-contaminate.
3. Cook: Cook to proper temperatures.
4. Chill: Refrigerate promptly.



What's in a Recipe

Flour, liquid, fat, sugar, eggs, leavening, and salt are the basic ingredients used in batters and doughs. The amounts of each and how they are mixed together determine the final product. The cooking time and temperature also make a difference. The quality of home-baked products depends on the proportions of ingredients, how they are mixed, cooking temperatures, and times. These relationships affect the color, flavor, texture, shape, and volume.

Flour

Flour contains proteins that combine with liquid to form gluten. This sticky, elastic material gets stronger and more elastic as the batter is stirred or the dough is kneaded. These strands of gluten form a network of cells that expand when heated. Baking “sets” this framework.

Flour also contains starch, which absorbs liquid and swells. When heated, this adds body to the framework of baked foods.

Three common types of flour are available:

All-purpose flour is a blend of hard and soft wheat flours, which makes it versatile for many products. It is usually enriched and may be bleached or unbleached.

Bread flour is made from hard wheat, which is rich in protein and forms strong gluten. It is desirable for yeast breads and rolls.

Cake flour is made from soft wheat, which is lower in protein, so less gluten is developed; thus it produces more tender cakes.

When the same amount of liquid is used, both all-purpose flour and bread flour produce a stiffer dough than cake flour.

Liquid

Some type of liquid is needed to develop the gluten, gelatinize the starch, activate the leavening agent, and dissolve the sugar and salt to distribute them through the batter or dough.

The proportion of water and flour helps determine the amount of gluten formed.

Milk is the most commonly used liquid, although fruit juice and water also can be used. Milk is 87 percent water and also contains protein. Milk tends to give baked products a finer texture, better color, and somewhat different flavor than water.

Fat

Shortening, cooking oil, butter, and margarine make baked products tender and rich. They also help retain freshness and serve to blend and distribute flavorings. When butter is used, it gives a special flavor to the final product.

Since fat is insoluble in any of the other ingredients, it separates the particles of dough. During baking, the fat melts while other ingredients are setting up. It is easy for the leavening gas to expand into the tiny areas of melted fat. Excess fat, however, weakens the gluten structure and can cause the product to decrease in volume or fall.

Vegetable shortening and oils are 100 percent fat. By contrast, butter and margarine are 80 percent fat with 20 percent water and milk solids.

Sugar

Although primarily added for sweetening, sugar has additional functions. Because it caramelizes with heat, sugar helps the product brown during baking. It also increases the tenderness of the product.

Honey, corn syrup, and molasses are sugars and can be substituted for granulated sugar, but the amount of liquid used also must be adjusted. As a guideline, try reducing the liquid by 1/4 cup.

Noncaloric sweetening agents require special recipes. They contribute a sweet flavor but do not tenderize or increase browning. Sometimes they lose their sweetening power and become bitter with heat.

Eggs

By their emulsifying action, egg yolks bring about even distribution of fat in batters and doughs. They promote tenderness and a fine texture. The egg proteins, along with gluten, form the structure of the product.

Beaten eggs, particularly beaten egg whites, aid in leavening because of the formation of tiny air cells. The air expands on heating and steam is formed from the moisture of the egg. As the egg proteins coagulate with heating, the cell walls become set.

Leavening

Leavening is produced by the release and/or expansion of gas or air in a batter or dough. A variety of substances contribute to lighten the batter dough.

Air is incorporated in baking mixtures in several ways. The most common is folding whipped egg whites into the batter. Other ways include beating whole eggs, creaming sugar and fat, and beating the batter itself.

Heating the batter or dough causes the air bubbles to expand, making the batter light. Angel food cakes depend on the incorporation of air for one-half to two-thirds of their leavening.

Baking powder releases gas during mixture and/or baking and is used in most cakes and quick breads. Baking powder contains baking soda (sodium bicarbonate) and acid-producing ingredients. In the presence of moisture and heat, these components react to form carbon dioxide gas, which expands and leavens.

Baking powder contains cornstarch to keep the mixture dry by absorbing moisture and to standardize measuring.

Baking soda is required to neutralize an acidic ingredient such as buttermilk, sour cream, sour milk, or molasses. The combination releases carbon dioxide gas, which leavens the batter or dough.

Steam provides the leavening in batters containing large proportions of liquid, such as popovers and cream puffs. When water is heated, it produces more than 1,600 times its volume in steam.

Yeast is a microscopic plant that grows rapidly in a warm, moist medium. It ferments sugar and/or starch to form carbon dioxide gas and alcohol. The gas is the principal leavener, but the alcohol vaporizes during baking and also helps in leavening.

During baking, the heat expands the gas, stops the yeast action in the raised dough, evaporates the alcohol, and sets the gluten.

Salt

The major function of salt in baked products is to add and enhance flavor. In yeast breads, it helps to control the action of the yeast, thus improving texture.

Baking Notes

Flours

Sifting Flour. Generations ago, sifting flour was a way to remove insects and other impurities. Flour was packed in cloth bags that let in moisture, causing flour to clump; sifting improved the accuracy of measuring by volume. Today's recipes are based on the measured volume of unsifted flour.

Measuring Flour. Flour settles during storage, making it more compact. Stirring flour in a canister or bag before measuring allows air between the particles. That makes measuring by volume more accurate. To measure 1 cup flour, spoon flour into cup and, without tapping or shaking the cup, scrape off any excess flour with a straight edge. Measuring this way gives you a cup of flour that weighs about 4 ounces; a cup scooped directly from bag can weigh more than 5 ounces.

Storing Flour. Flour should be stored in airtight containers to avoid excess moisture and unwanted pests. White flour will stay fresh at room temperature for a year; in the refrigerator or freezer it keeps indefinitely. Whole wheat and other whole grain flours contain oils that can become rancid. They will last about three months at room temperature, six months in the refrigerator, or a year in the freezer.

Bleached Flour. Flour labeled "bleached" is made to look whiter than it is naturally. Two common bleaching agents are benzoyl peroxide and chlorine dioxide. Bleaching doesn't affect the function of the flour, just the appearance.

Leavening Agents

Saleratus. Saleratus is an old term for baking soda. It referred to both potassium bicarbonate and sodium bicarbonate. Potassium bicarbonate disappeared from use in the early 1800s because it had an unpleasant aftertaste.

Baking Soda. Baking soda is derived from an ore called "trona" and other sources. When baking soda is heated, it slowly breaks down into sodium carbonate, water, and carbon dioxide. If combined with anything acidic, it

produces carbon dioxide immediately; heat is not needed to create the reaction.

Cream of Tartar. The earliest source of cream of tartar was the fruit acid that accumulated on the inside of wine casks as a wine matures. It was used to create the first baking powder. Single-acting baking powder contained baking soda, cream of tartar, and a little cornstarch to keep the two powders dry and inactive.

Double-Acting Baking Powder. Double-acting baking powder contains baking soda and two acids. One acid reacts immediately with the soda in a batter. The other acid doesn't react until a batter is heated. All baking powders contain a little cornstarch to absorb moisture and prevent premature reaction of the acid and base.

Homemade Baking Powder. A mixture of 1/2 teaspoon cream of tartar and 1/4 teaspoon baking soda provides the leavening action of 1 teaspoon baking powder. To get the leavening benefit, the batter needs to be placed in the oven quickly.

How much baking powder. A general guide for using baking powder: Use 1 teaspoon of baking powder for each 1 cup of flour; add 1/2 teaspoon of baking powder for each 1 cup of extra ingredient such as raisins, berries, or cheese. These extra ingredients make it harder for the batter to expand and so more leavening is needed for heavier batter to achieve the desired volume.

Baking soda or baking powder. A recipe often contains both baking powder and baking soda when any ingredient in the batter is particularly acidic. It's possible to use just baking powder, but the flavor of the bread will be more acidic and the texture less coarse. Examples of ingredients that react with

1/2 teaspoon of baking soda include

1 cup buttermilk, sour cream, or yogurt

3/4 cup brown sugar, honey, or molasses

2 tablespoons vinegar or lemon juice

1/2 cup cocoa

Modifying Recipes

You may decide you want to change a favorite recipe to limit fat, sugar, or sodium. Here are some general guidelines:

Fat. A general guideline for quick bread recipes is to add 1 to 4 tablespoons of fat (oil, butter, margarine, or shortening) per cup of flour. The fat in recipes often can be reduced by one-quarter to one-third. Reducing fat too much can produce bread that is tough and dry.

Sugar. A general guideline for quick bread recipes is to use 1 to 4 tablespoons of sugar (granulated sugar, brown sugar, molasses, honey) per cup of flour. The sugar in recipes often can be reduced by one-quarter to one-third. Reducing sugar too much can produce bread that lacks flavor and is tough or dry.

Salt. A general guideline for quick bread recipes is to use $\frac{1}{4}$ to $\frac{1}{2}$ teaspoon salt per cup of flour. The salt can be omitted from most recipes. Reducing or eliminating salt may affect flavor slightly.

Egg. One egg can be replaced with two egg whites. This may be most successful when a recipe contains more than one egg. If a recipe contains more than one egg, you can also try using one less egg.

A Cook's Language and Tools

A successful cook needs to learn the language of cooking, especially when using written recipes. Specific words are used to describe ways of manipulating ingredients, and certain tools are used for the task. You don't need many of the kitchen gadgets that are available, but some basic tools will make many tasks easier.

Measuring

Many recipes give instructions for measuring the amount of each ingredient. Sometimes measurements are not vital, such as the amount of carrots, cucumber, and lettuce in a tossed salad. For other recipes, however, such as muffins, careful measuring is very important.

counting measure quantities of food such as six apples or one cucumber or use a timer to measure minutes or hours of cooking time.

volume of liquid ingredients choose the appropriate size spoon or cup. To use a liquid measuring cup, place it on a flat surface and then move your body so that the correct measuring line is at eye level. Keep your eye on the line while pouring the liquid.

volume of dry ingredients choose the appropriate size spoon or cup. Most dry ingredients should be spooned into the cup (without packing it down) and leveled off with a table knife. An exception is brown sugar, which is packed.

Tools to Use

liquid measuring cups a clear glass or plastic cup with a spout that is marked (1 cup, 1/2 cup, and so on) to measure liquid ingredients.

dry measuring cups a standardized set of cups (1 cup, 1/2 cup, 1/3 cup, 1/4 cup) used to measure dry ingredients.

measuring spoons a standardized set of spoons (1 tablespoon, 1 teaspoon, 1/2 teaspoon, 1/4 teaspoon, 1/8 teaspoon) used to measure small amounts of either dry or liquid ingredients.

timer a device for measuring cooking time.

Measuring Math

For dry and liquid ingredients

3 teaspoons = 1 tablespoon
4 tablespoons = 1/4 cup
5 tablespoons + 1 teaspoon = 1/3 cup
8 tablespoons = 1/2 cup
16 tablespoons = 1 cup

For liquids

2 cups = 1 pint
4 cups = 1 quart
2 quarts = 1/2 gallon
4 quarts = 1 gallon

For margarine or butter (stick form)

2 sticks = 1 cup
1 stick = 1/2 cup
1/2 stick = 1/4 cup

Common abbreviations

T = Tbsp = tablespoon
t = tsp = teaspoon
c = cup

Cutting

Many recipes call for prep work that involves cutting food into smaller pieces. Sometimes it's just a matter of what looks good. Other times a certain cutting technique will help to cook the food evenly or quickly.

chop to cut into irregularly shaped pieces.

dice to cut into cubes of the same size.

mince to chop very fine.

slice to cut into uniform slices.

grate to rub a food across the tiny punched holes of a grater.

shred to rub a food across the medium to large holes or slits of a grater.

peel to remove the skin from a fruit or vegetable.

core to remove the middle or core from a fruit.

Tools to Use

cutting board made from wood or plastic and provides a safe surface on which to cut foods.

knives available in several sizes and styles to suit the cutting job: paring knife, slicing knife, chef's knife, carving knife, or serrated bread knife.

pizza cutter a tool with a circular blade designed to roll across a flat surface such as pizza or tortillas.

peeler a tool with special blades designed to remove the peel from fruits and vegetables.

grater a tool with various-sized holes used for grating and shredding foods such as cheese and vegetables.

apple corer a tool designed for inserting into apples to remove the core.

can opener a tool designed to open cans.

Mixing

There are many ways to mix ingredients together. Different words are often used to describe very similar tasks.

beat to move the spoon rapidly back and forth to blend ingredients until the mixture is very smooth.

blend to put the ingredients in a blender, food processor, or electric mixer and process until the mixture is smooth.

combine to mix or toss so that ingredients are evenly distributed.

fold to move the spoon or rubber scraper with a gentle over-and-under motion.

mix to combine ingredients so they are all evenly distributed.

stir to mix together with a spoon, often while food cooks in a pan on the stove.

toss to mix ingredients gently.

whip to beat rapidly using a circular motion to incorporate air into the mixture.

Tools to Use

mixing bowls round-bottomed bowls in various sizes used for mixing foods.

wooden spoons spoons in various sizes for mixing and stirring ingredients.

wire whisk a tool designed for blending ingredients, particularly useful for rapidly incorporating air into a mixture.

potato masher a flat, perforated tool on a handle designed to mash foods such as potatoes.

pastry brush a soft brush used to spread food such as melted butter.

spatula a rubber spatula has a flexible rubber or plastic blade that is used to scrape bowls, pots, and pans and to fold ingredients together. A metal spatula has a long, narrow, flexible metal blade that is used to level off ingredients when measuring or to frost cakes. A wide spatula is used to flip pancakes or other foods.

Separating

Sometimes there is a need to separate components of food.

drain to separate liquid from solid.

separate eggs to separate the yolk from the white.

Tools to Use

colander a large perforated bowl used for rinsing or draining food.

strainer or sieve a mesh-wire tool used for separating liquids from solids.

hand juicer a tool for squeezing juice from foods such as lemons or oranges.

Heating Food

The appearance, texture, and flavor of food change when it is heated. Following are a few basic ways of cooking foods.

bake to cook in a conventional oven.

boil to heat a liquid to its boiling point or to cook a food in boiling liquid.

microwave to cook in a microwave oven.

simmer to heat a liquid to just below its boiling point or to cook in a simmering liquid.

steam to cook in the steam of boiling water.

toast to brown lightly in a toaster or oven.

Tools to Use

baking pan a square, round, or rectangular pan used for cooking foods in the oven.

baking sheet a large rectangular pan with narrow or no sides.

pizza pan a large round pan with narrow sides.

baking dish a dish that can safely be used in a conventional oven.

microwave dish a dish that can safely be used in a microwave oven.

saucepan or cooking pot a pan with a tight-fitting lid used for general stovetop cooking.

steamer basket a perforated metal basket that fits into a saucepan for steaming vegetables or other foods.

skillet or frying pan a low-sided pan used for general stovetop cooking.

Fast Facts about Ingredients

Iron

- Iron is a mineral (nutrient) your body needs to function properly.
- Iron is used to make hemoglobin, which carries oxygen in the blood. We can't live without oxygen and we can't use the oxygen we breathe without iron.
- Iron is measured in milligrams. Small amounts are in a variety of foods.
- Youth ages 9 to 12 need 10 to 15 milligrams of iron a day. Many don't get enough.
- Some ingredients that add iron to muffins and other quick breads include whole grains, whole grain flours, enriched flours, raisins, dried apricots, prunes, and dates.
- The iron in meat is more easily absorbed by the body than the iron in plant foods.
- Vitamin C from fruits or other foods can increase the amount of iron absorbed from plant foods. Heat from baking destroys vitamin C in fruits or juices added to quick breads.

Baking Ingredients

- Sugar adds sweetness. It contributes tenderness and browning to breads.
- Salt adds flavor. It can be omitted from most quick bread recipes.
- Baking powder and baking soda are leavening agents that produce carbon dioxide gas. The gas expands the batter.
- Oven heat increases the leavening action and then sets the structure of the bread.
- Wheat flour contains both starch and protein. The protein forms gluten, which creates the structure of breads.

- Overmixing a batter forms too much gluten, making quick breads tough and filled with tunnels.
- Rye and other grains contain more starch and less protein than wheat; these flours are often combined with wheat flour.
- Sugar and starch are carbohydrates. Starch is a complex carbohydrate with many sugar molecules linked together.

Fiber

- Fiber is measured in grams.
- Fiber describes any of several components in plants (cellulose, hemicellulose, lignin, pectin).
- Most fiber is not digested. It stays in the intestinal tract, helping move food and wastes through it.
- Fiber is not a nutrient, but it is important for good health.
- Whole grains, whole grain flours, vegetables, fruits, and nuts are common sources of fiber.
- All-purpose flour that is "enriched" contains B-vitamins and iron lost during processing, but not the fiber.
- Fiber is in the outer layers (bran) of wheat kernels.
- Whole wheat flour includes the bran, germ, and endosperm of wheat kernels—what's left after removing the outer hull. All-purpose flour is made from only the endosperm in the kernel of wheat.

Leavening Agents

- A reaction between an acid and a base creates carbon dioxide gas that makes batters rise.
- Heat from the oven continues the reaction and creates steam. Steam swells the air pockets and expands the batter.
- Early baking powders were made by mixing cream of tartar and baking soda.
- Double-acting baking powder produces some carbon dioxide when mixed with other ingredients, but much more is produced after the batter is heated.
- Leavening agents are a major source of sodium in quick breads. The amount of sodium in baking powder depends on the chemicals used to make it.

Fat

- Fat is measured in grams.
- Each gram of fat contains 9 calories; protein or carbohydrate contains 4. Limiting fat is a good way to limit calories.
- Youth ages 9 to 12 should limit fat to 30 percent of total calories (70 percent will be from carbohydrates and protein).
- The body needs some fat for normal growth and development.
- Too much fat contributes to excess weight, heart disease, and other health problems.
- Animal foods are usually higher in fat than plant foods. Nuts and avocados are two high-fat plant foods.
- Muffins and other quick breads usually contain more fat than yeast breads.

Calories

- A Calorie (capital C) is the unit of measure for energy in food; it equals one kilocalorie.
- It's now common practice to use the word "calorie" for "kilocalorie." One cup of skim milk really contains 90,000 calories or 90 *kilocalories*; common usage abbreviates this to 90 *calories*.
- Calories provide energy for all body functions, including physical activity.
- Unused calories are stored as body fat.
- Limiting high-fat foods is a good way to limit excess calories.
- Limiting foods that provide calories but not much else is a good way to limit excess calories.
- Being active is a good way to use calories and stay fit.

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Notes

Notes

Cooking Up Fun!

Helping youth acquire independent cooking skills will promote healthy food choices and good nutrition. *Muffins & More* is a collection of recipes and food activities to use with youth ages 9 to 12 in informal, educational settings. Recipes, science experiments, and food activities engage youth in active, investigative learning.

This teaching guide includes

- 14 recipes for muffins and other quick breads
- 12 activities to interpret and use recipes
- 7 activities to practice food and kitchen safety
- 12 science experiments to understand functions of ingredients
- an annotated listing of storybooks about bread
- background information about the Food Guide Pyramid, nutrients, food safety, baking, and cooking tools and techniques



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